

# NASA TECHNICAL MEMORANDUM

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## COMPATIBILITY OF MATERIALS WITH LIQUID OXYGEN - VOLUME I

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Astronautics Laboratory

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# TABLE OF CONTENTS

	Page
SUMMARY.....	1
SECTION I. INTRODUCTION.....	1
SECTION II. TEST METHOD.....	4
A. Equipment.....	4
B. Sample Preparation.....	5
1. Solid Materials.....	5
2. Liquids.....	7
3. Semi-Solids.....	7
4. Dye Penetrant, System Components, Dyes, and Leak Check Compounds.....	7
5. Solders.....	10
6. O-rings - O-ring Materials.....	10
C. Acceptance Criteria.....	10
SECTION III. RESULTS.....	11
SECTION IV. DISCUSSION.....	13
A. Lubricants.....	13
B. Sealants and Threading Compounds.....	14
C. Thermal and Electrical Insulation.....	15
D. Elastomers, Plastics, Adhesives.....	31
E. Gaskets and Packing.....	33
F. Metals, Alloys, Solders, and Surface Treatments.....	34
G. Solvents, Cleaning Agents, Miscellaneous.....	36
H. Dye Penetrants.....	38
I. Development of Test Method.....	39
REFERENCES.....	221

## LIST OF FIGURES

Figure	Title	Page
1.	LOX Impact Sensitivity Tester.....	2
2.	Details of Striker, Sample Cup, and Sample (Impact Sensitivity Tester) .....	6
3.	Samples in Test Cups.....	8
4.	Grease Insert Cup Holder.....	9
5.	Sample Freezing Box.....	9
6.	Effect of LN <sub>2</sub> Dilution on LOX Impact Sensitivity of Micarta.....	17
7.	Effect of LN <sub>2</sub> Dilution on LOX Impact Sensitivity of Hexcell 9ILD Honeycomb.....	18
8.	Effect of LN <sub>2</sub> Dilution on LOX Impact Sensitivity of HT-424 Adhesive.....	19
9.	Effect of LN <sub>2</sub> Dilution on LOX Impact Sensitivity of Nylon Epoxy Adhesive FM-1000.....	20
10.	Effect of LN <sub>2</sub> Dilution on LOX Impact Sensitivity of E-Bond Rubber Sealant 1018.....	21
11.	Effect of LN <sub>2</sub> Dilution of LOX Impact Sensitivity of Hexcell Polyurethane Insulation.....	22
12.	Effect of LN <sub>2</sub> Dilution of LOX Impact Sensitivity on Red Wing Silicone Rubber.....	23
13.	Effect of LN <sub>2</sub> Dilution on LOX Impact Sensitivity of 5Al-2.5Sn Titanium Alloy, 0.063-inch Thick.....	24
14.	Effect of LN <sub>2</sub> Dilution on LOX Impact Sensitivity of Mylar, 1-mil Thick.....	25
15.	Effect of LN <sub>2</sub> Dilution on LOX Impact Sensitivity of Magnolia Foam 7015-1.....	26
16.	Effect of LN <sub>2</sub> Dilution on LOX Impact Sensitivity of CPR-20 Insulation Density - 4#/FT <sup>3</sup> .....	27
17.	Effect of LN <sub>2</sub> Dilution on LOX Impact Sensitivity of CPR 1921-2 Foam.....	28



## LIST OF FIGURES (CONTINUED)

18.	Effect of LN <sub>2</sub> Dilution on LOX Impact Sensitivity of HRP Honeycomb Filled with CPR.....	29
19.	Effect of LN <sub>2</sub> Dilution on Threshold Values for Various Materials.....	30

## LIST OF TABLES

Table	Title	Page
I	Lubricants.....	42
II	Sealants and Threading Compounds.....	71
III	Thermal and Electric Insulation.....	75
IV	Plastics, Elastomers, and Adhesives.....	87
V	Gaskets and Packings.....	151
VI	Metal, Alloys, Solders, and Surface Treatments.....	165
VII	Chemicals, Solvents, and Miscellaneous.....	180
VIII	Dye Penetrants.....	199



## COMPATIBILITY OF MATERIALS WITH LIQUID OXYGEN - VOLUME I

### SUMMARY

The test instrument and procedure developed by Lucas and Riehl (Ref. 1) was used to determine the compatibility of a wide variety of materials with liquid oxygen (LOX). This method is based upon the tendency of materials to react with LOX on impact and is commonly known as the "ABMA Tester." Within the past 15 years' use, over 240,000 individual test drops have been made on approximately 2,000 different materials.

Pertinent data from these tests have been compiled, and the findings are presented in this report. Recommendations are made for the guidance of designers and others in the selection of safe materials for use in oxygen systems. Materials are discussed according to the following classifications: (1) Lubricants, (2) Sealants and Threading Compounds, (3) Thermal and Electrical Insulation, (4) Elastomers, Plastics and Adhesives, (5) Gaskets and Packing, (6) Metals, Alloys, and Solders, (7) Solvents, Cleaning Solutions, and Miscellaneous, and (8) Dye Penetrants.

### INTRODUCTION

Liquid oxygen is one of the most important oxidizers in missiles and space vehicles and is the only propellant common to all of the "building block" stages for the Saturn I, Saturn IB, and Saturn V space vehicles (S-I, S-IV, S-IB, S-IC, S-II, S-IVB). It is well known that many materials in contact with liquid oxygen (LOX) are capable of exploding and/or igniting when subjected to mechanical shock or some other sudden energy surge. Organic materials of the type conventionally used as fuels, lubricants, gaskets, etc., are particularly hazardous. The environmental and structural demands imposed on space vehicle systems make it impossible to rigidly exclude all materials that fall within these categories. Accordingly, a LOX impact test device (Fig. 1) was developed to provide information of the relative hazard presented by these materials. This instrument has been in use for over 15 years on a continuous basis to assess the hazard associated with products and materials contemplated for use in space vehicle LOX systems at the George C. Marshall Space Flight Center (MSFC). The development of this method and device was described by Lucas and Riehl (Ref. 1).

This report presents data accumulated during approximately 15 years of test evaluation using the ABMA Tester. At this writing, over 240,000 individual tests have been made on approximately 2000 different materials.

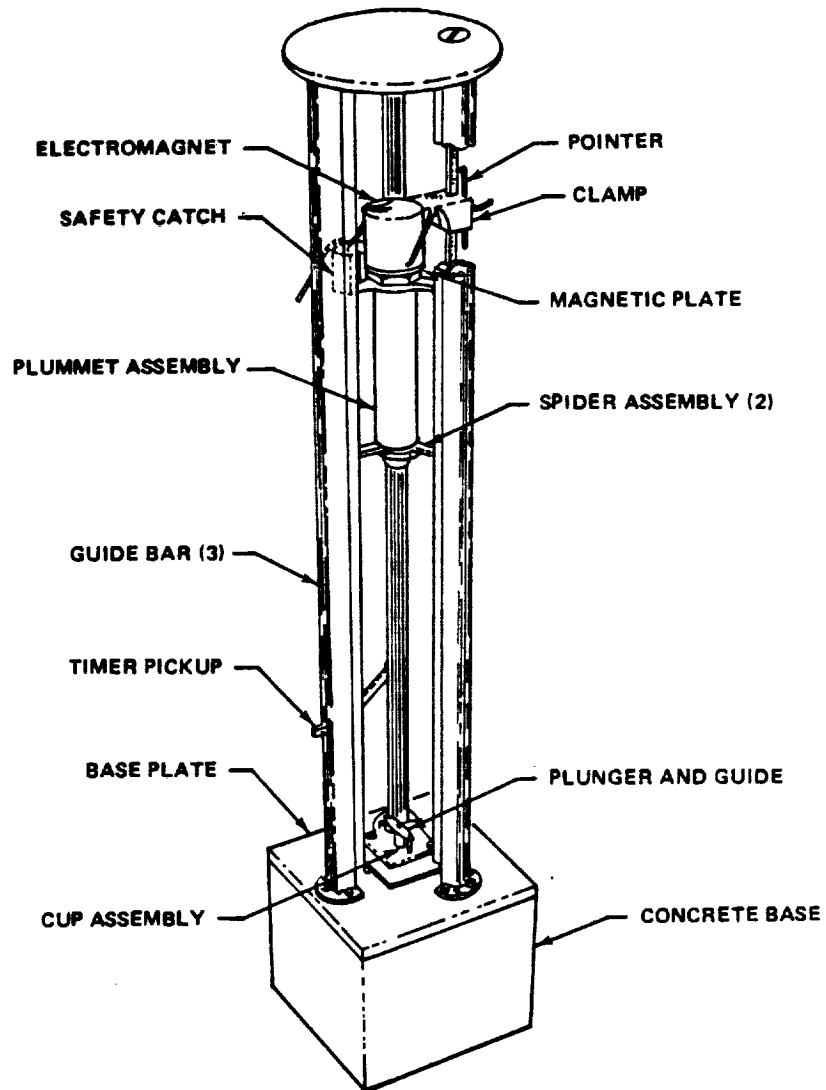


FIGURE 1. LOX IMPACT SENSITIVITY TESTER

at this Center (or its organization predecessor\*). The object of this report is to provide general information about the reactivity of materials in liquid oxygen.

Recommendations are made for guidance of designers and others in the selection of safe materials for use in oxygen systems. These recommendations apply also to systems containing other gases (air, nitrogen, helium, etc.) that are intended for purging or pressurizing oxygen systems. Any reactive material (lubricant, O-ring, sealant, gasket, etc.) employed in a purge or pressurization system could be swept or introduced into the LOX system where it could create a service hazard.

The level of acceptability now in use (10 kg-m) evolved during early work on this test procedure as applied to thread sealants for LOX service. It was found that the current test parameters would insure acceptance of a product which had a satisfactory record of service in LOX equipment. Extension of these requirements to other materials known or suspected to have been involved in accidents occurring with LOX equipment, as reported in the literature, have proven unsatisfactory by this test method. The reliability of this method is substantiated by the fact that no accident has ever been reported with any product qualified by it.

While impact or mechanical energy is the basis for this test method, other forms of energy are capable of triggering these mixtures. These forms of energy can arise from unforeseen, unpredictable, and sometimes unknown sources. The mere fact that an unsatisfactory component or material in a liquid oxygen system is not expected to encounter impact energy at the location where it is to function cannot justify its use. The device for transmitting impact energy was favored for this test program because it is basically the simplest method of transmitting a measurable amount of energy to a test fixture.

Many of the materials listed in this report are commercial products and were not developed or manufactured for use in liquid oxygen systems. Therefore, failure to meet the criteria to which they were subjected should not be constrained to imply lack of endorsement with regard to any other criteria or properties other than those in the specific test.

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\* Prior to July 1, 1960, this Center was the Development Operations Division of the Army Ballistic Missile Agency. As the test method and instrument were developed several years ago under the cognizance of the Army, and since the instrument has since become widely known as the "ABMA Impact Sensitivity Test Instrument," it will be referred to as such in this report, even though this instrument is now used under cognizance of Marshall Space Flight Center.

This report is a compilation of all data generated at MSFC using the procedures outlined in MSFC-SPEC-106B. This report supercedes the following reports:

1. "Compatibility of Engineering Materials with Liquid Oxygen," MTP-M-S&M-M-61-7, dated March 21, 1961, by J. E. Curry and W. A. Riehl.
2. "Compatibility of Dye Penetrants and Penetrant System Components with Liquid Oxygen," IN-P&VE-M-66-5, dated November 3, 1966, by C. F. Key.
3. "Compatibility of Materials with Liquid Oxygen," NASA TM X-985, dated August 1964, by C. F. Key and W. A. Riehl.
4. "Compatibility of Materials with Liquid Oxygen," NASA TM X-53052, dated May 26, 1964, by C. F. Key.
5. "Compatibility of Materials with Liquid Oxygen, III," NASA TM X-53533, dated November 3, 1966, by C. F. Key.
6. "Compatibility of Materials with Liquid Oxygen, IV," NASA TM X-53773, dated August 23, 1968, by C. F. Key.

As a result of the Apollo 13 investigation, test evaluations of materials in LOX/GOX, as a function of pressure and temperature, have been instituted. The high pressure mechanical impact test is specified in MSFC-SPEC-101B, Type D, Categorization "Flammability, Odor, and Offgassing Requirements and Test Procedures for Materials in Environments which Support Combustion." Test evaluations conducted at this Center indicate increased reactivity with both pressure and temperature (Ref. 2, 3, 4). However, it is apparent that the procedures outlined in MSFC-SPEC-106B are still a valid first step in rating the relative hazards of materials in LOX/GOX systems.

#### TEST METHOD

##### Equipment

The apparatus used for all of the tests reported herein was the "ABMA Tester."

The mechanical features and operations of the ABMA LOX impact tester have been described comprehensively in other reports and will not be stated herein (Ref. 1 and MSFC-SPEC-106B). It should be noted, however, that experience gained throughout this program has confirmed consistently the absolute necessity of guarding against contamination

in the test equipment if meaningful results are to be obtained. Special cleaning practices are followed in preparing the test equipment, and it has been found that any deviation from these procedures usually is reflected in anomalous results during subsequent tests.

In principle, this test procedure involves dropping a standard plummet of known weight, 9.04 Kg (20 pounds), from known heights, up to 1.1 meters (43.3 inches), under carefully controlled near-frictionless conditions. This plummet strikes a striker pin which is resting on a layer of the material being tested in the bottom of an expendable aluminum alloy cup. The remainder of the sample cup is filled with liquid oxygen. Details of striker cup and sample are shown in Figure 2. During a series of such tests, a material capable of reacting with LOX under these conditions will explode or flash brilliantly, or will ignite and burn. Threshold determinations are generally made with materials that are reactive at 10 kg-m. These determinations are made by conducting 20 separate tests at specified drop heights until no reactions are shown. This threshold value is considered an indication of the hazard associated with the material under evaluation.

#### Sample Preparation

It has been found in previous work (Ref. 1) that sample preparation is a very important factor if reproducible test results are to be obtained. With all samples tested, LOX impact sensitivity varies with thickness. Reactivity generally increases as the sample thickness is decreased. However, this relationship cannot be assumed to be directly proportional and may actually reverse with some materials. For example, with some sheet titanium samples, there appeared to be a trend toward increased reactivity with thicker samples (Ref. 5). It is quite difficult to ascertain the inherent relationship of thickness and sensitivity to impact because multiple factors usually are involved, such as sample hardness, flexibility, ductility, etc., at LOX temperatures.

Data generated using plastics such as cellulose acetate butyrate, polyethylene, polyvinyl, chloride, and others illustrate that reactivity increases with decreasing thickness.

Solid Materials. - All solid materials (metals, gaskets, plastics, etc.) are tested in the form of 11/16-inch diameter discs in the specific thickness intended for use. Pressure sensitive tapes, coatings, surface treatments, etc., are tested after applying them to test discs of the metal or other substrate upon which they will be used in service. When hard or granular materials are to be tested, a type 347 stainless steel insert is placed as a false bottom in each sample cup. This technique was necessitated by the early discovery in the program that some hard materials (silica, carborundum, etc.) could give a false

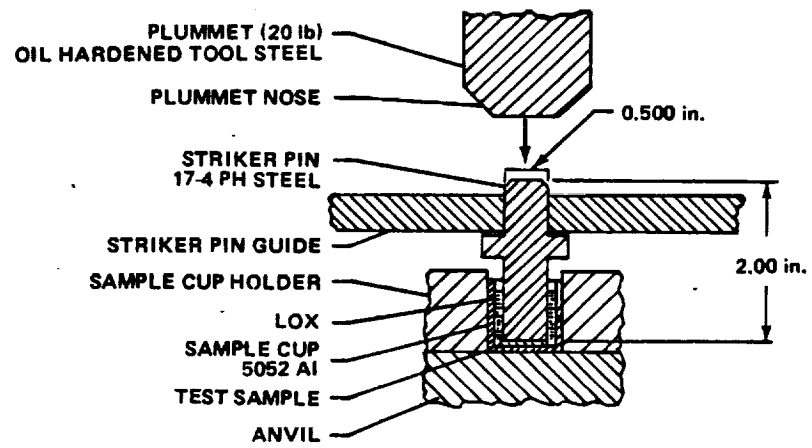


FIGURE 2. DETAILS OF STRIKER, SAMPLE CUP, AND SAMPLE  
(IMPACT SENSITIVITY TESTER)



indication of impact sensitivity under the conditions imposed by this test procedure. Such hard materials are driven into the aluminum sample cup by the plunger, causing extreme local deformation of the metal. The heat liberated at microscopic points of contact between the aluminum and the granular material is in some cases sufficient to trigger a detectable reaction between the fresh aluminum surface and the LOX. (Data showing this effect were reported in Ref. 1.)

Liquids. - Materials such as lubricants, sealants, etc. whose thickness is not dictated by the intended application, are normally tested in thicknesses of 0.050 inch. This thickness was selected on the basis of providing a condition to which test results are most sensitive to variations in materials (Ref. 1). This thickness can be attained readily in the case of liquid materials by metering individual samples into the test cups from a burette. It has been ascertained that 0.50 cc of liquid will produce a 0.050 inch (+ approximately 0.005 inch) layer in the bottom of the test cups (Fig. 3).

Semi-Solids. - Greases, caulking compounds, and other semi-solid materials are tested at a thickness of 0.050 inch by use of special cup inserts. These inserts are fabricated from type 5052 aluminum and have an internal depth of  $0.050 \pm 0.005$  inch; a series of twenty insert cups are placed in a special holder (Fig. 4). Sufficient material is pressed into the cups with a clean stainless steel spatula until a smooth surface, flush with the top, is obtained. The insert cups then are removed and placed in the bottom of the regular specimen cups with tweezers (Fig. 3).

A freezing technique has been developed which provides uniform frozen samples of both liquids and semi-solids. The test cups, containing the samples are placed in a special freezing box (Fig. 5). LOX is poured into the bottom, and the samples are slowly frozen by the vapors. After freezing, sufficient LOX is introduced to overflow and fill the test cups. Any samples that crack and float in the LOX are discarded.

Dye Penetrant System Components, Dyes, and Leak Check Compounds  
Dye penetrant system components, dyes, and leak check compounds are test evaluated by a special technique. This technique consists of immersing vapor degreased, unsealed, sulfuric acid anodized aluminum 6061-T6 discs (11/16-inch diameter and 1/16-inch thick) in the component for 15 minutes, then standing the discs on edge in a special fixture, and allowing them to drain for 15 minutes to remove excess component.\*

\* This method is a modification of one suggested by Mr. J. R. Alburger, Shannon Luminous Materials Company, in a private communication dated March 3, 1964, to Dr. W. R. Lucas.

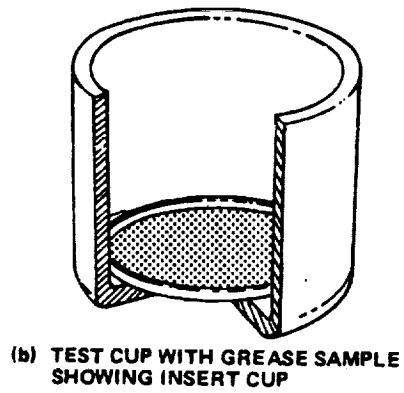
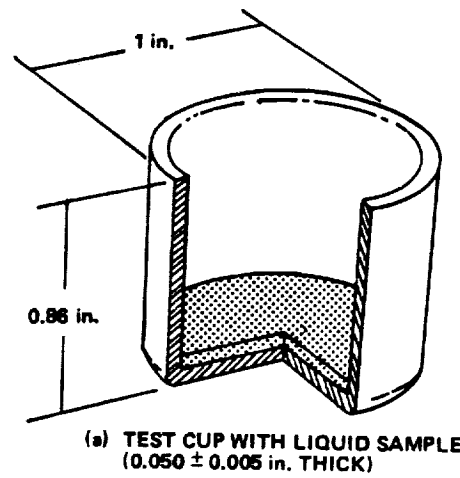


FIGURE 3. SAMPLES IN TEST CUPS

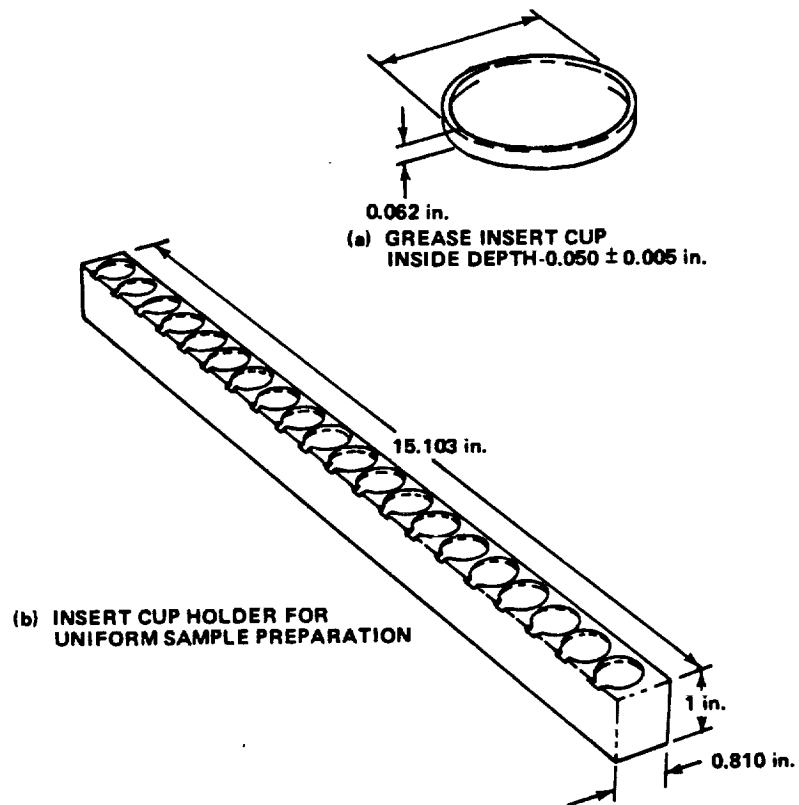


FIGURE 4. GREASE INSERT CUP HOLDER

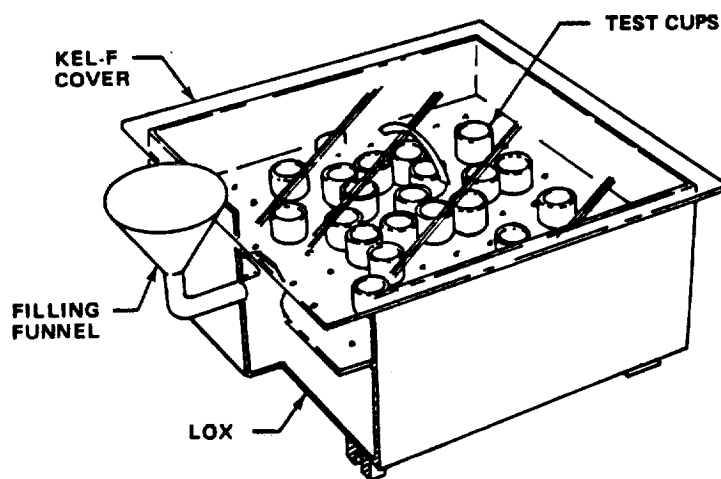


FIGURE 5. SAMPLE FREEZING BOX

The treated discs are transferred to the test cup and tested in accordance with MSFC-SPEC-106B. For consistency and convenience, this procedure is used for testing not only the dye penetrant but each of the components of the penetrant system, dyes, and leak check compounds.

Solders. - Solders are generally test evaluated as flat sheets. The sheets are prepared by melting and casting the solders to form ingots. The ingots are rolled into flat sheets  $0.020 \pm 0.005$  inch thick. Discs  $11/16$  inch in diameter are punched and cleaned and tested by placing the discs on stainless steel inserts in the bottom of the cup. If rosin core solder is used, care must be taken to insure that the rosin is burned off or removed completely prior to evaluation.

O-rings - O-ring Materials. - Each size from each batch of O-rings and/or O-ring materials shall be sampled and tested as follows unless it can be demonstrated that test results on different sizes and batches are comparable.

1) Extruded O-rings are evaluated as clean discs ( $11/16$ -inch diameter by thickness of O-rings) cut from a strip after the chopping operation. The discs shall be processed and deflashed with the same equipment used for the O-rings.

2) Molded O-rings are evaluated as clean discs ( $11/16$ -inch diameter by thickness of O-ring) that have been processed and deflashed in the same equipment used for the O-rings.

3) O-rings from standard stock or where above procedures are impractical ( $1/2$ -inch outside diameter or less) are evaluated as a complete O-ring. O-rings larger than  $1/2$ -inch outside diameter shall be tested as one segment (approximately  $3/4$ -inch long) on a stainless steel insert. Cleaning procedures must be specified on the test request sheet.

The details of sample preparation and acceptance criteria are described in MSFC-SPEC-106B and Amendment 1.

#### Acceptance Criteria

In order to acceptance-test a material for use in LOX systems, twenty separate samples of the material submerged in LOX are subjected to 10 kg-m (72 ft-lbs) impact energy delivered through a  $1/2$ -inch diameter contact area. More than one indication of sensitivity is cause for immediate rejection. A single explosion, flash, or other indication of sensitivity during the initial series of twenty tests requires that an additional forty samples be tested without incident to assure acceptability of the material. These criteria are based on

a substantial body of data including more than 240,000 tests.

## RESULTS

The results obtained by application of the foregoing test procedure to a wide variety of different products are tabulated according to categories in Tables I through VIII.

There are two ratings given for each material: one for the individual sample or lot evaluated; the other for the material in general. For example, it should be noted that Viton "A" has an overall batch test rating even though individual samples or batches may be satisfactory or unsatisfactory. The materials are rated as follows when evaluated in accordance with the provisions of MSFC-SPEC-1063:

Satisfactory (S) - Approved for LOX service if cleaned and/or processed by applicable MSFC standards.

Jar Test (JT) - Satisfactory as stated above with the provision that each jar or sample within a manufacturer's batch must be individually tested and found acceptable.

Batch Test (BT) - Satisfactory with the provision that each manufacturer's batch of the product must be individually tested and found acceptable.

Incomplete (I) - Insufficient test experience to rate sample adequately.

Unsatisfactory (U) - Capable of vigorous burning or exploding in contact with LOX.

The batch test, jar test, and incomplete categories deserve special mention. Materials which are basically compatible with LOX can be rendered incompatible by trace amounts of impurities. The policy of MSFC is to rate as satisfactory specific lots of new materials found to be insensitive, if the chemical composition of these materials is available. However, such materials generally are placed in the batch test category until tests have been completed on samples from a sufficient number of different lots to indicate adequate quality control. The large number of materials included in the batch test category reflects the practice of testing new products as they appear on the market even when no immediate application is indicated. Materials for which the chemical composition is not available, and for which samples from only one of two lots have been tested, are placed in the incomplete category.

Such materials are not approved for LOX service until additional information becomes available. In addition, it has been found that variations can occur within a given lot or batch. Therefore, it is necessary to test each sample within a certain batch or lot.

Three notes of caution are in order. (1) Whenever possible, a complete identification is made of the materials tested. Although some general conclusions can be drawn relative to certain classes or chemical families of materials, it is definitely unsafe to predict the behavior of any totally new product on this basis. Even materials normally inert to LOX can be rendered unsafe by minute amounts of processing additives, pigments, etc., that may be favored by one manufacturer or processor. It is equally unsafe to define a material for a specific application in liquid oxygen solely on the basis of a military or other specification for a general purpose product, since most of such specifications do not limit sufficiently the chemical constitution of the product. (2) Assuming there is freedom from deleterious additives or contaminants, the chemical nature of the product primarily governs its behavior toward LOX. For these reasons, the tabulated test data are applicable only to the specific proprietary products mentioned and may not apply to other similar materials or to other products meeting the same specification. (3) It has been determined that most material specifications on the fluorinated plastics are not sufficient to determine that they are of virgin, unfilled, or undyed variety. This has necessitated a change in some of the ratings listed in the tables to reflect this concern. Fluorinated plastics are generally given a rating of batch test unless it has a manufacturer identification number. Under no circumstances should a rating of satisfactory be inferred for all polytetrafluoroethylene, fluorinated ethylene propylene, or chlorotrifluorocarbon polymers unless the specific manufacturer's or vendor's product has been evaluated in its use thickness.

An additional factor that must be kept in mind in evaluating the data is that only the chemical compatibility of the material with oxygen systems is reported herein. This criterion will apply to all materials which may contact oxygen. However, many other factors usually must be considered before a final material selection can be made. For example, if a lubricant were to be used on an O-ring in a valve in an oxygen system at low temperature, at least four additional factors must be investigated as follows:

1. Corrosivity of the lubricant and metal components which it may contact during storage and use,
2. Compatibility of the lubricant and elastomer O-ring or other seals,
3. Low temperature behavior of the lubricant,

#### 4. Lubricity of the material under operating conditions.

Naturally, the factors to be considered in final selection of any material are dependent upon the service intended. Selection and evaluation of these factors will vary widely. Thus, it is not feasible to attempt to provide in this report all of the information necessary to assess fully the adequacy of a material for specific applications. However, unless extenuating circumstances exist, this Center will not approve the use of any material listed as "Unsatisfactory" in the attached tables in oxygen systems.

The selection of the specific material to use among those rated as satisfactory will depend upon the particular application intended. This Center should be consulted directly for such assistance.

### DISCUSSION

#### Lubricants

Lubricants tested for impact sensitivity in LOX are shown in Table 1. It is realized that none of the fluids or greases that withstood the impact test would actually function as lubricants at LOX temperature (-297°F). However, all materials withstanding this test are considered safe for use in gaseous oxygen, which also is a hazardous environment. The only type of lubricant capable of functioning at LOX temperature would be a solid or dry film lubricant. Although a number of these appear insensitive to impact, their adhesion and functional characteristics at LOX temperature have not yet been proven through use at this Center.

All petroleum-derived lubricants tested to date have proven to be impact sensitive, as expected. The conventional silicone greases and fluids constitute a similar hazard.

All completely fluorinated and/or chlorinated fluids and greases tested to date have proven satisfactory for LOX service from the standpoint of impact sensitivity. This includes materials now being marketed under the trade names of "Fluorolube", "Kel-F," and "Halocarbon." \* However, any specific fluorocarbon lubricant for which no data are tabulated should be tested prior to use to insure that its inherent compatibility will not be affected adversely by additives that may be present.

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\*The names of the manufacturers of all proprietary products mentioned in the test of this report are provided in Tables 1 through 8.

Chlorofluorocarbon oils and greases ("Fluorolubes," "Kel-Fs," and "Halocarbons") are not sensitive to impact in LOX (at 72 ft.-lbs.). However, under conditions of high shear involving aluminum in the presence of these agents, explosions can occur, even in the absence of liquid oxygen. These conditions have been created experimentally by forcing a rotating aluminum or steel rod, chucked in a drill press, into contact with an aluminum plate which has been smeared with the chlorofluorocarbon under investigation. Explosions have been triggered in this manner with a number of aluminum alloy-chlorofluorocarbon combinations. These conditions may appear more stringent than normally would be encountered in lubricant or thread sealant applications. However, the availability of other materials not subject to this behavior is believed to warrant the exclusion of chlorofluorocarbons from lubricant or sealant applications involving shear loading with aluminum. It is interesting to note that no explosions have been produced with fully fluorinated hydrocarbons. Apparently, chlorine substitution is required to render the fluorocarbon susceptible to reaction with aluminum under shear conditions.

A new family of fluorinated greases and oils offer the most promise as universal lubricants. This family of lubricants are manufactured under the trade names of KRYTOX (E. I. DuPont de Nemours & Company), Braycote 631A Micronic Grease (Bray Oil Company) & Fomblin Series Y (Montecatini Edison). However, only KRYTOX-240AC has been sufficiently test evaluated to obtain a Satisfactory rating. A number of dry film lubricants have been rated Satisfactory. These are primarily inorganic bonded types.

#### Sealants and Threading Compounds

Sealants and threading compounds listed in this category are those materials which are applied to connections or threaded fittings for the dual purpose of preventing seizing or galling during assembly, and minimizing leakage in use. "Sealants" are defined herein as materials which do not normally harden or set and are employed in non-permanent applications. "Threading compounds" are those which harden and are for use on permanent type joints. Until recently, efforts to locate a consistently satisfactory LOX thread sealant from a proprietary source have not been successful. Most commercial sealants formulated specifically for LOX service are mixtures of commercial-purity graphite and chlorinated aromatic compounds. Early experience with sealants having this basic composition indicated that trace impurities in graphite may render the final product impact sensitive. Only a special grade of graphite purified by acid treatment was found to give consistently satisfactory results when formulated into a sealant and tested as described. For several years, a LOX sealant for use at this Center (designated "AR-IF" sealant) was formulated internally, and each batch was tested



on an individual basis to insure conformity to our requirements.

A thread sealant manufactured by the Acheson Colloids Company (Dag Dispersion 1730) has become available. A number of batches of this product have been tested thus far, and all were approved for LOX use. This material is recommended as a replacement for "AR-IP" LOX sealant. However, batchwise acceptance testing by MSFC-SPEC-106B is still necessary to insure product quality.

One other proprietary sealant, "Anderol X-133," is available which is satisfactory from the standpoint of LOX compatibility. It has not been recommended for use at this Center because it is highly corrosive to aluminum alloys 5086, 6061, and 2024, which are used widely in LOX piping.

A number of threading compounds are cited in Table II as being satisfactory for LOX service. These are primarily inorganic silicate cements.

A number of proprietary polytetrafluoroethylene sealing tapes have been evaluated and found satisfactory. The results are shown in Table II. These adhesive-free tapes are used to wrap male pipe threads before assembly. During assembly, extrusion of the Teflon through the threads provided a leak-tight seal. These tapes are also effective anti-seize agents.

#### Thermal and Electrical Insulation (Table III)

A number of thermal insulations have been tested although they would not normally be in direct contact with LOX. All foam plastic and mastic types of insulation investigated have been impact sensitive with the exception of Dynatherm D-65. The latter is an intumescent coating containing approximately 66% inorganic filler materials. Dynatherm D-65 should be tested batchwise (in the use thickness) prior to any application where it may ultimately contact liquid oxygen. The moisture protective overcoating for Dynatherm D-65 (i.e., D-904) has been found impact sensitive.

Several bulk fiberglass insulations also appear unsatisfactory, due probably to additives employed to control fiber or matt properties. Subsequent heat treating frequently renders these materials satisfactory. Two bulk fiberglass insulation materials appear satisfactory for LOX service (Glass Fiber "B" 621, J. I. Microfiber Felt. No. 108). It is stressed that each batch of these materials should be tested for LOX compatibility. Two varieties of cellular glass, Foamsil and Foam Glass, have proven satisfactory when tested for LOX compatibility.

Two study programs have been completed to investigate the LOX/OX reactivity of organic thermal insulation materials (plastics and elastomers) used for liquid hydrogen systems. This reactivity occurs because air usually is condensed on the surface from the atmosphere by the extremely low temperature. Re-evaporation and re-condensation processes probably will occur to varying degrees within external insulation thereon. Upon evaporation, liquid air becomes enriched in oxygen content.

The first study investigated the impact sensitivity of thermal insulation materials used externally in liquid hydrogen systems was investigated as a function of LOX concentration in LN<sub>2</sub>. Results are published in NASA TMX-53208, dated February 15, 1965 (Ref. 6).

This study evaluated the reactivity of a number of materials in LOX/LN<sub>2</sub> mixtures. The actual LOX/LN<sub>2</sub> mixtures used for the test samples were analyzed by use of special techniques.

The data were generated using the following materials:

<u>Material</u>	<u>Thickness (Inches)</u>
Nicarta	0.063
Mercell 91 LD Honeycomb	0.25
HR-424 Adhesive	0.013
FT-1000 Adhesive	0.010
E-Bond Rubber Sealant H1013	0.050
Mercell Polyurethane Insulation 1414-2	0.250
Rockwing Silicone Rubber	0.063
EA1-2.5Sn Titanium Alloy	0.063
Kelvar	0.001
Magnolia 7015-1	0.25
CPR 20 Insulation	0.25
CPR 1021-2 Foam	0.25
HRP Honeycomb filled with CPR 1021-2 Foam bonded to 2014-T6 Aluminum	0.44

The results are presented graphically in Figures 6 through 13. Each plotted point represents the percentage of reactions in at least 20 tests.

Results for most of the materials indicate that relatively large proportions of LN<sub>2</sub> were required to reduce the reaction frequencies or to increase the threshold energy levels appreciably. This is further demonstrated in Figure 19 in which the observed threshold levels (the energy levels corresponding to a zero reaction frequency) are plotted as a function of the mixture ratio. Inspection of the results indicates that the rate and extent of decrease vary widely and probably

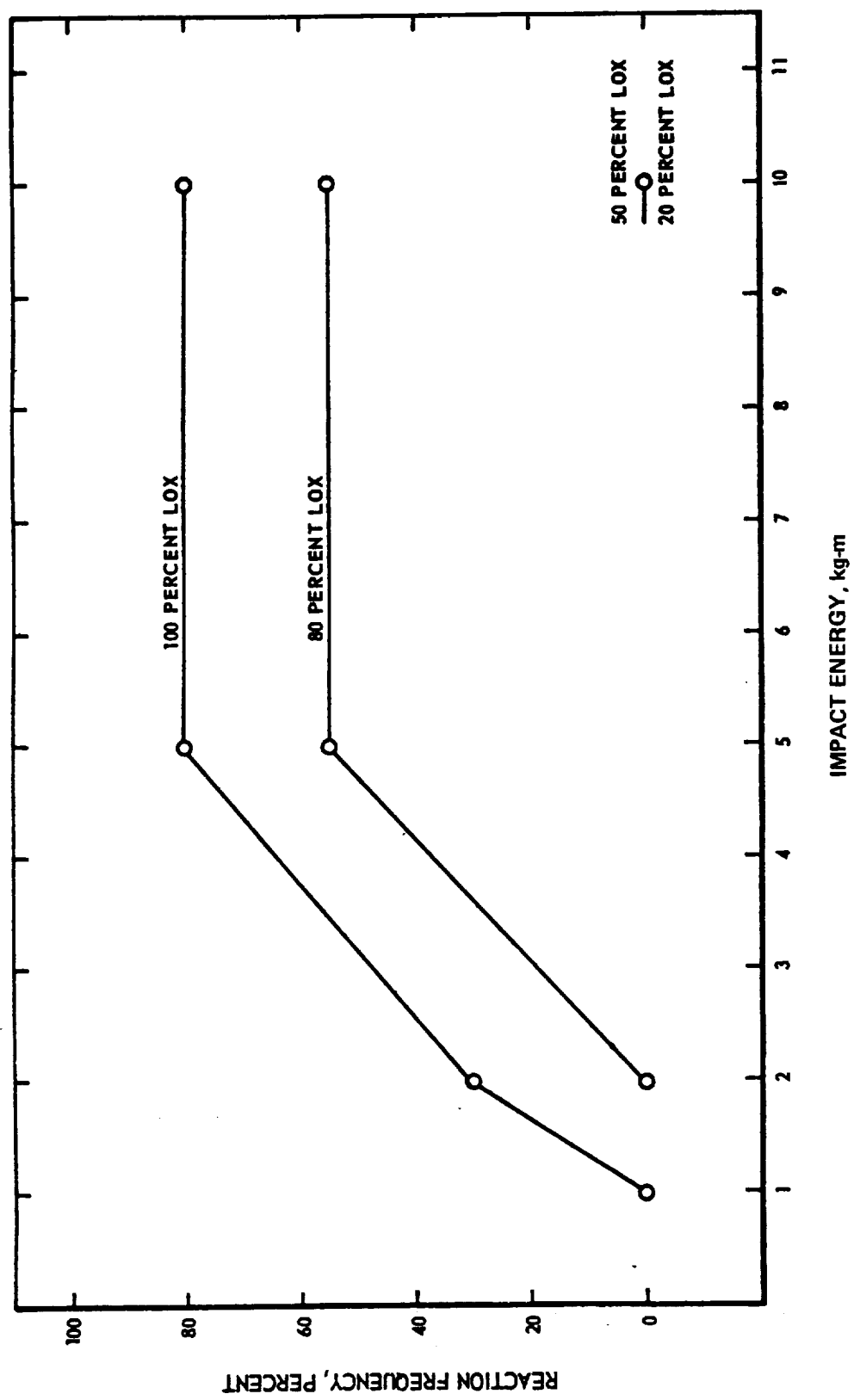


FIGURE 6. EFFECT OF  $\text{LN}_2$  DILUTION ON LOX IMPACT SENSITIVITY OF MICARTA

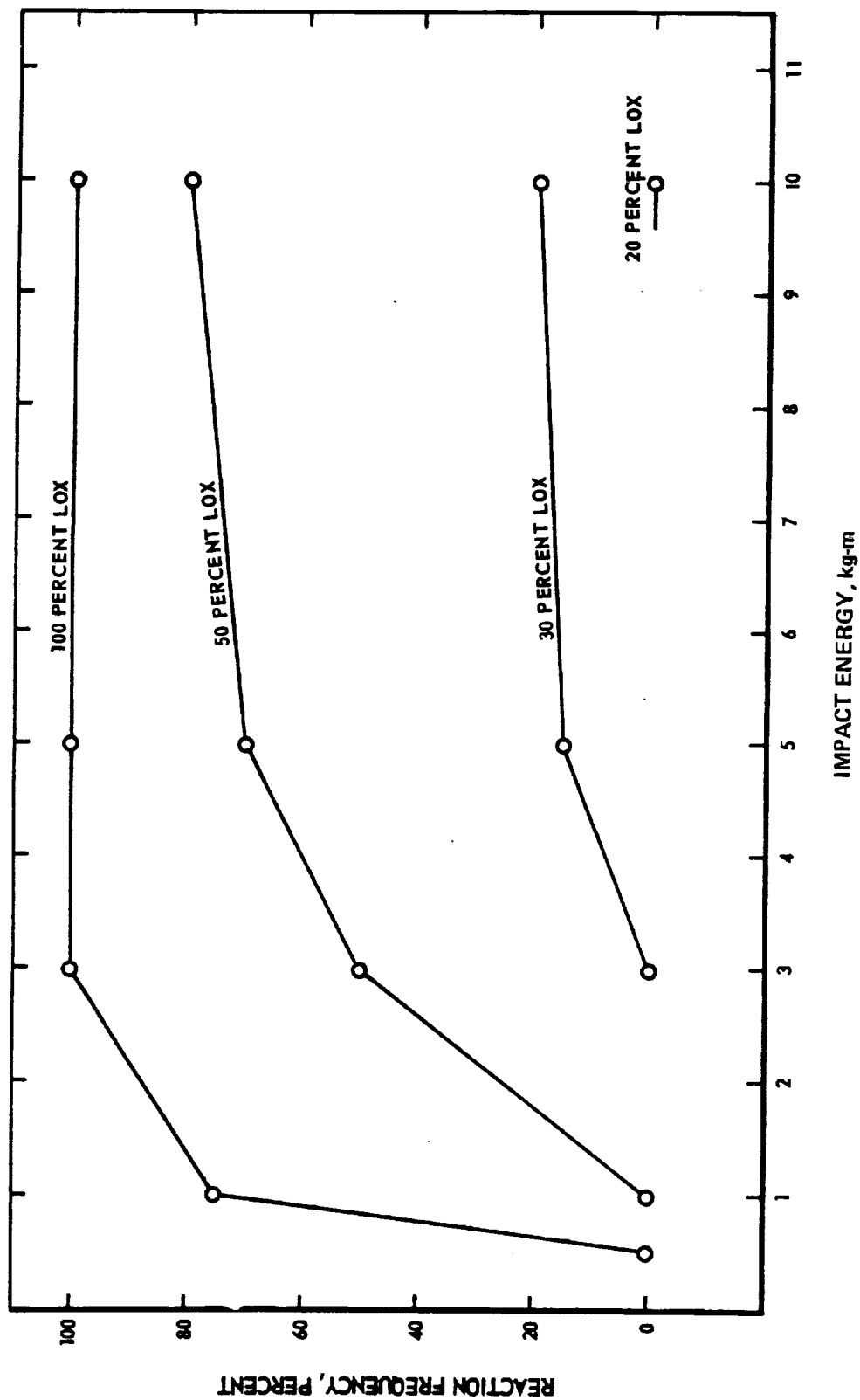


FIGURE 7. EFFECT OF  $LN_2$  DILUTION ON LOX IMPACT SENSITIVITY OF HEXCELL 9ILD HONEYCOMB

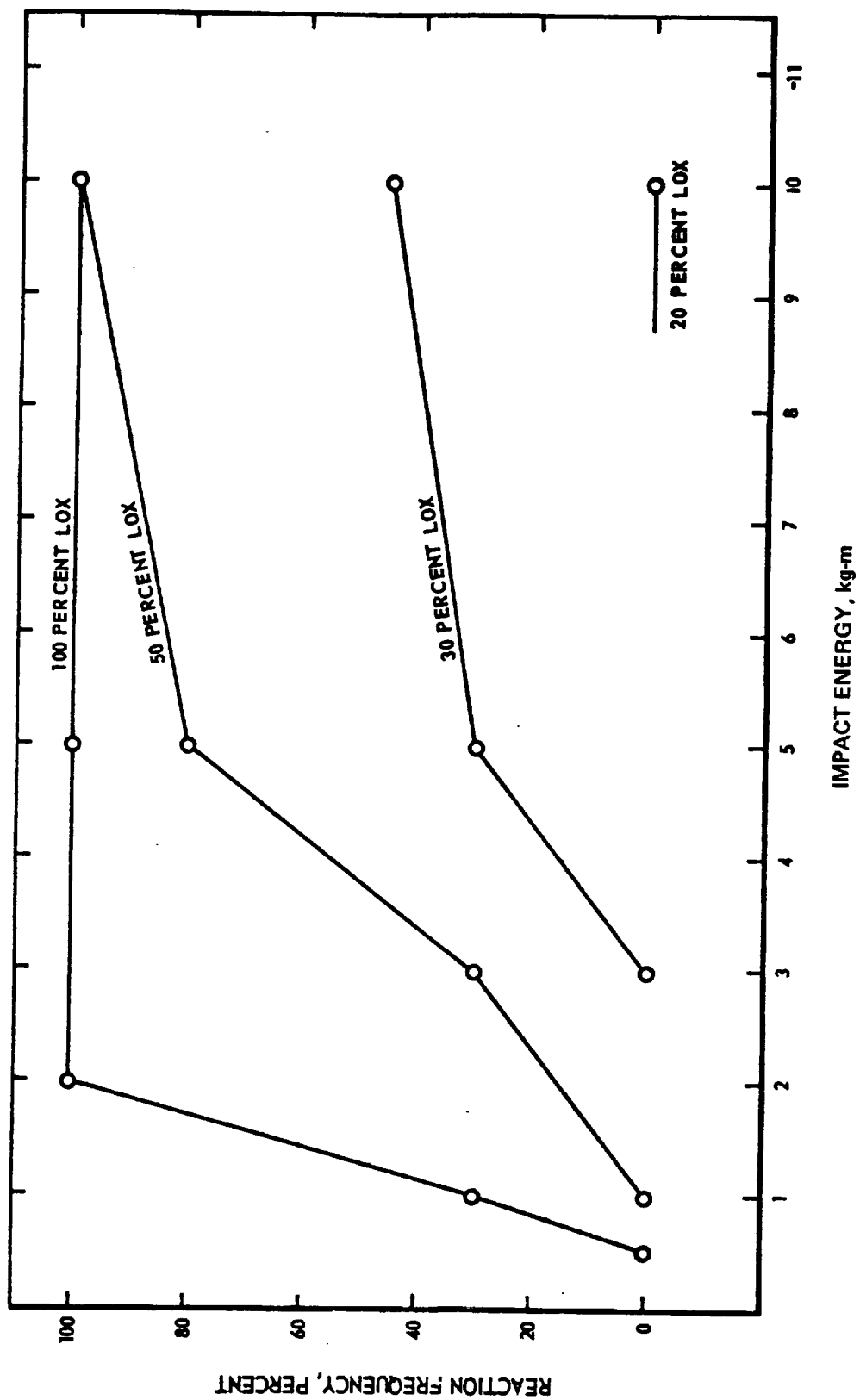


FIGURE 8. EFFECT OF  $LN_2$  DILUTION ON LOX IMPACT SENSITIVITY OF HT-424 ADHESIVE

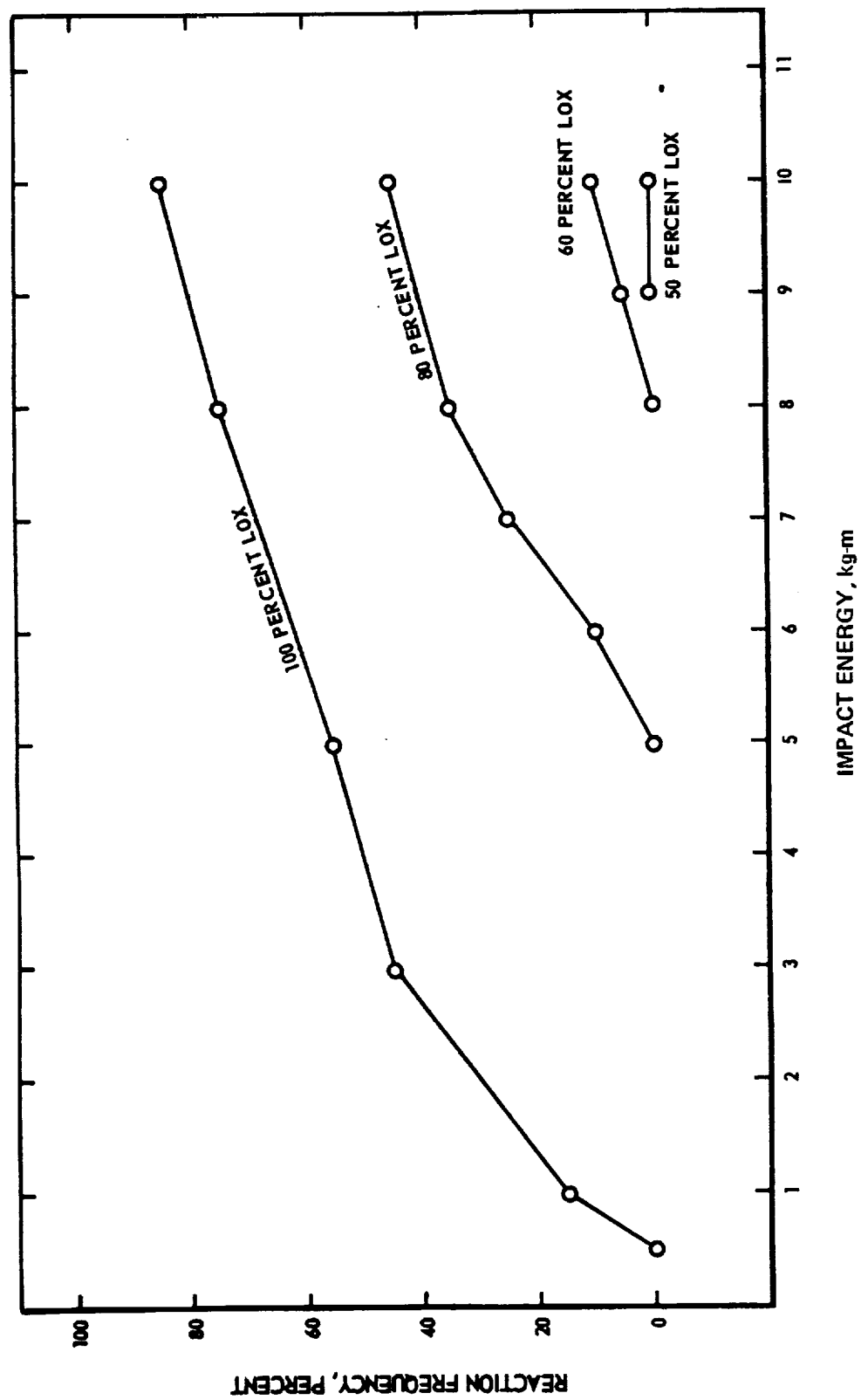


FIGURE 9. EFFECT OF LN<sub>2</sub> DILUTION ON LOX IMPACT SENSITIVITY  
OF NYLON EPOXY ADHESIVE FM-1000

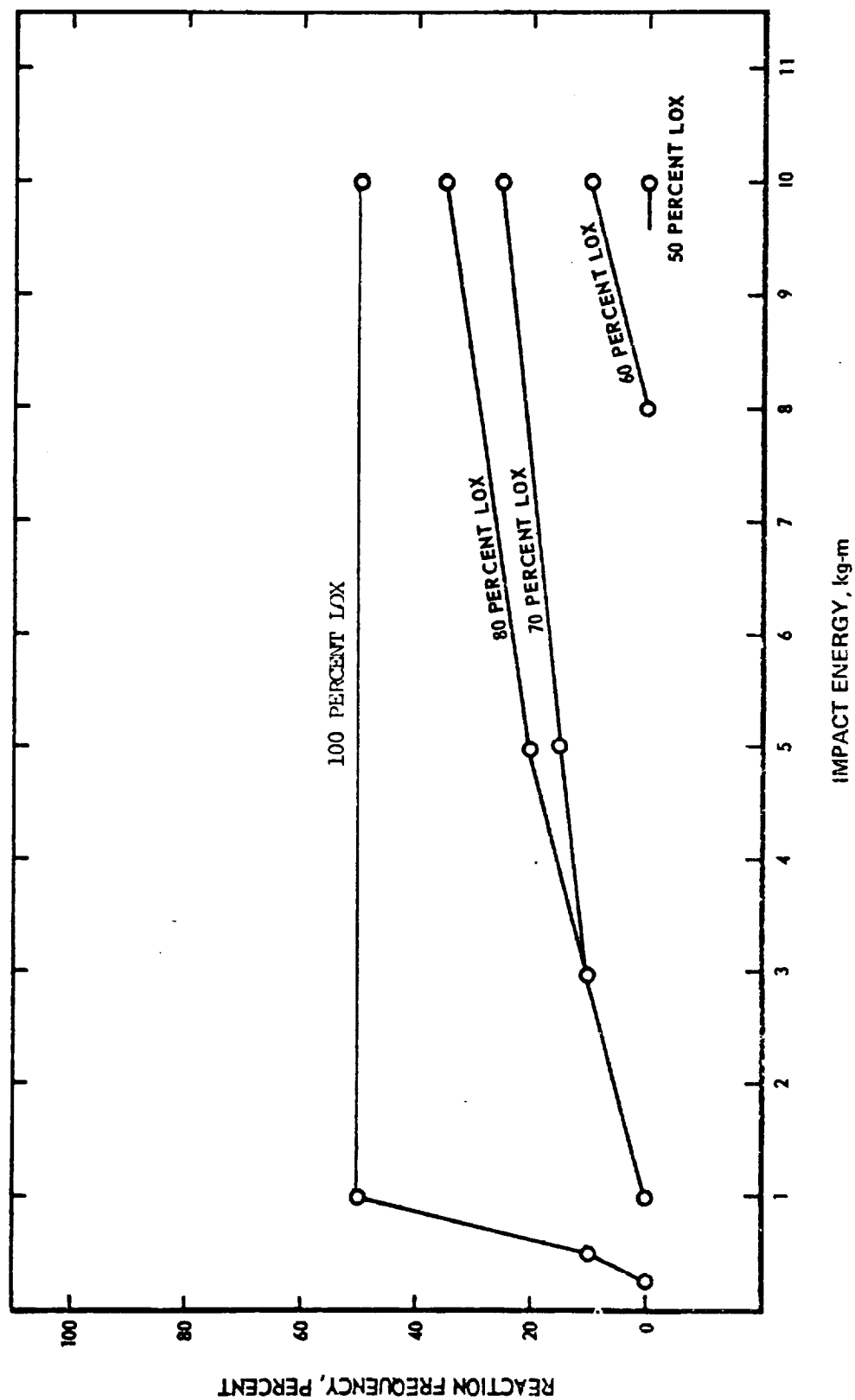


FIGURE 10. EFFECT OF LN<sub>2</sub> DILUTION ON LOX IMPACT SENSITIVITY OF E-POND RUBBER SEALANT 1018

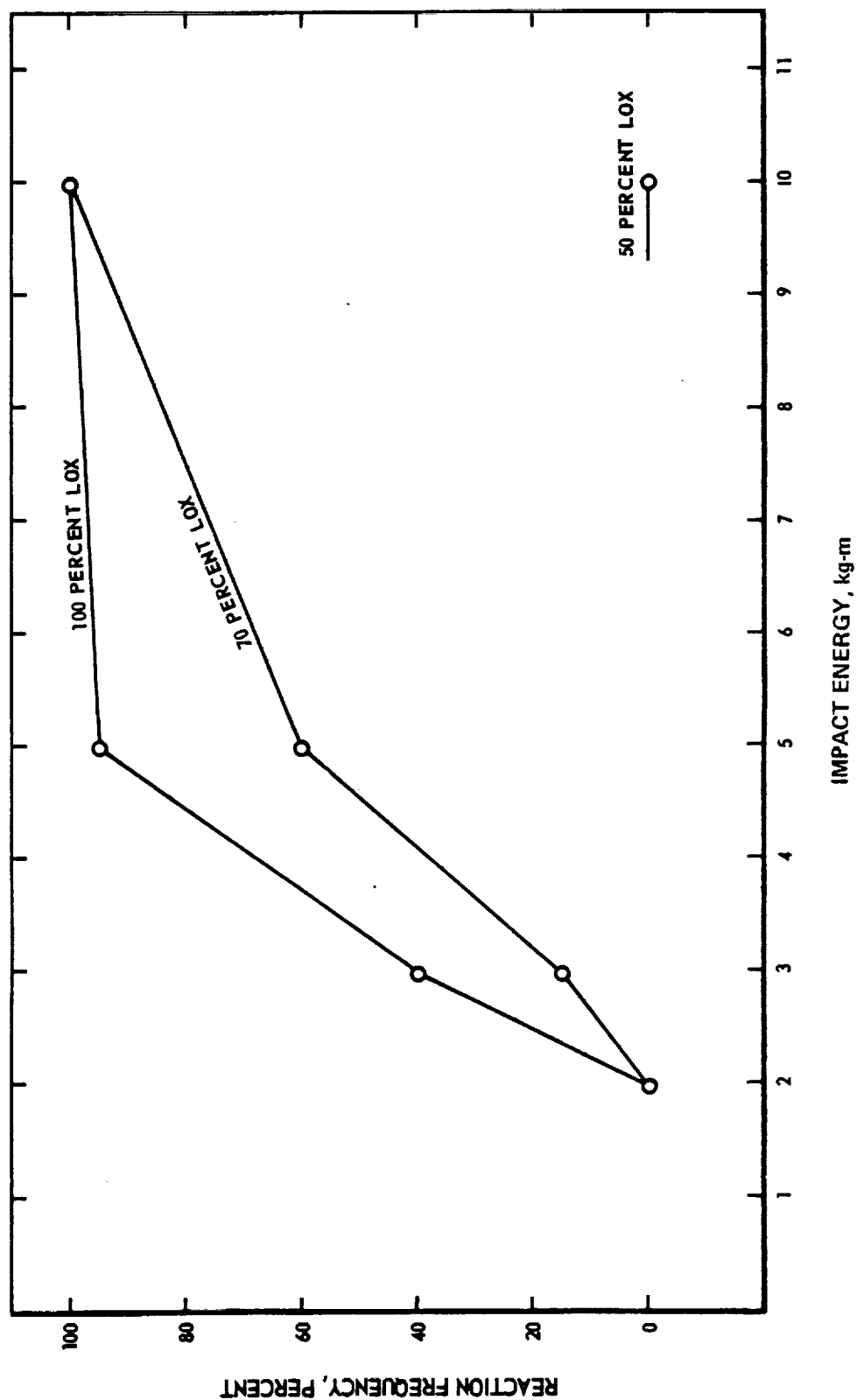


FIGURE 11. EFFECT OF LN<sub>2</sub> DILUTION OF LOX IMPACT SENSITIVITY OF HEXCELL POLYURETHANE INSULATION



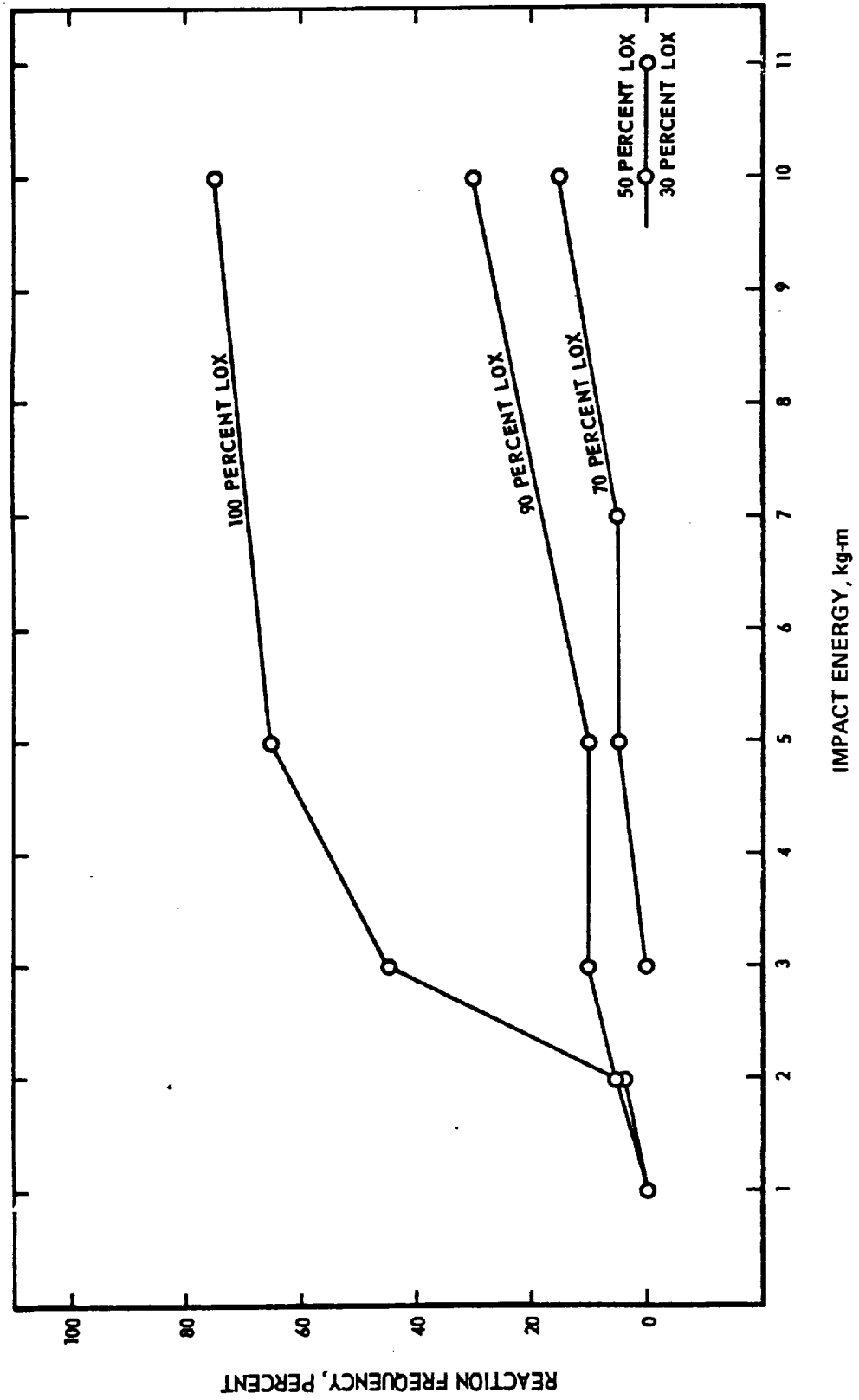


FIGURE 12. EFFECT OF LN<sub>2</sub> DILUTION OF LOX IMPACT SENSITIVITY  
ON RED WING SILICONE RUBBER

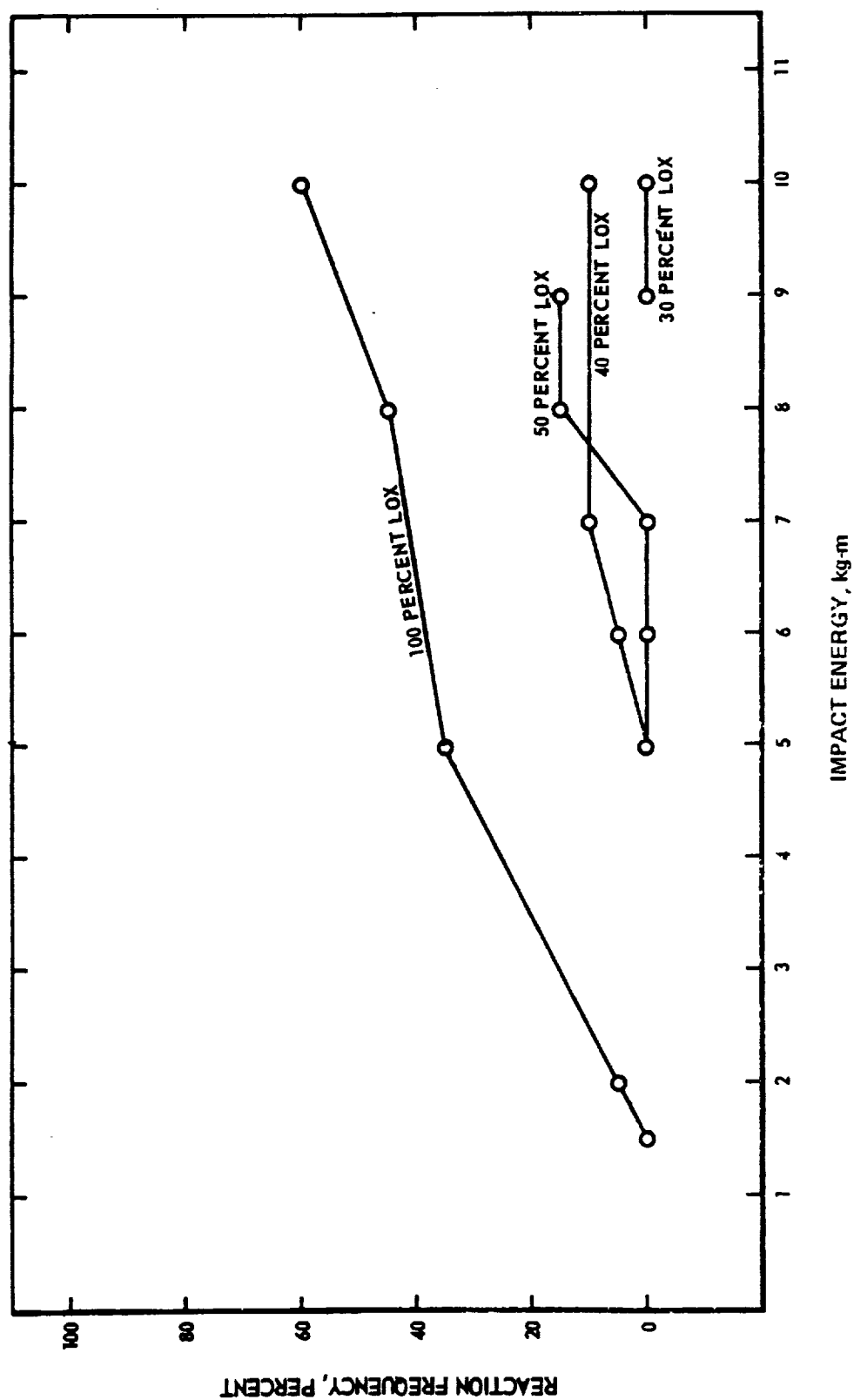


FIGURE 13. EFFECT OF  $\text{LN}_2$  DILUTION ON LOX IMPACT SENSITIVITY  
OF 5A1-2.5SN TITANIUM ALLOY, 0.063-INCH THICK

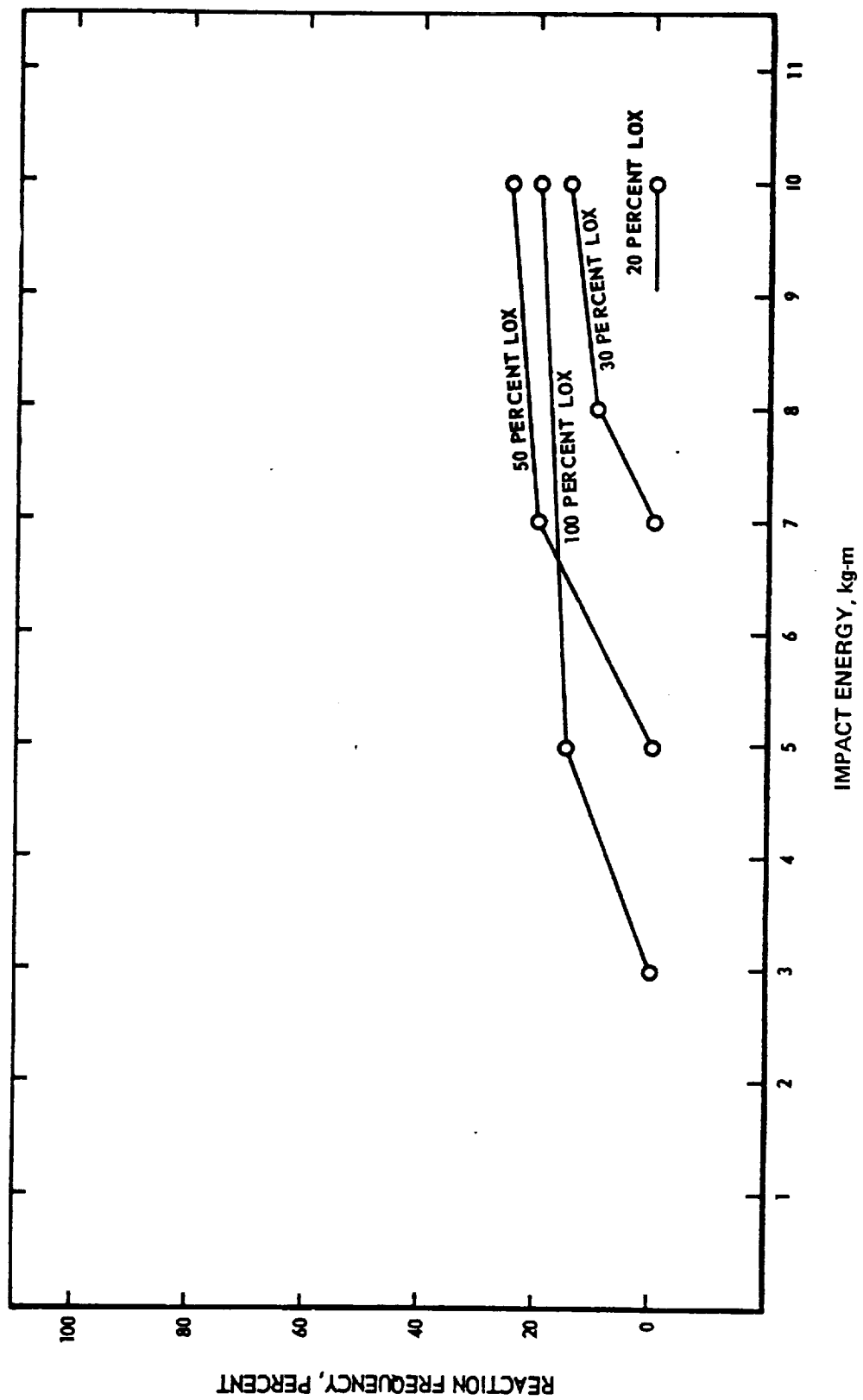


FIGURE 14. EFFECT OF  $LN_2$  DILUTION ON LOX IMPACT SENSITIVITY OF MYLAR, 1-MIL THICK

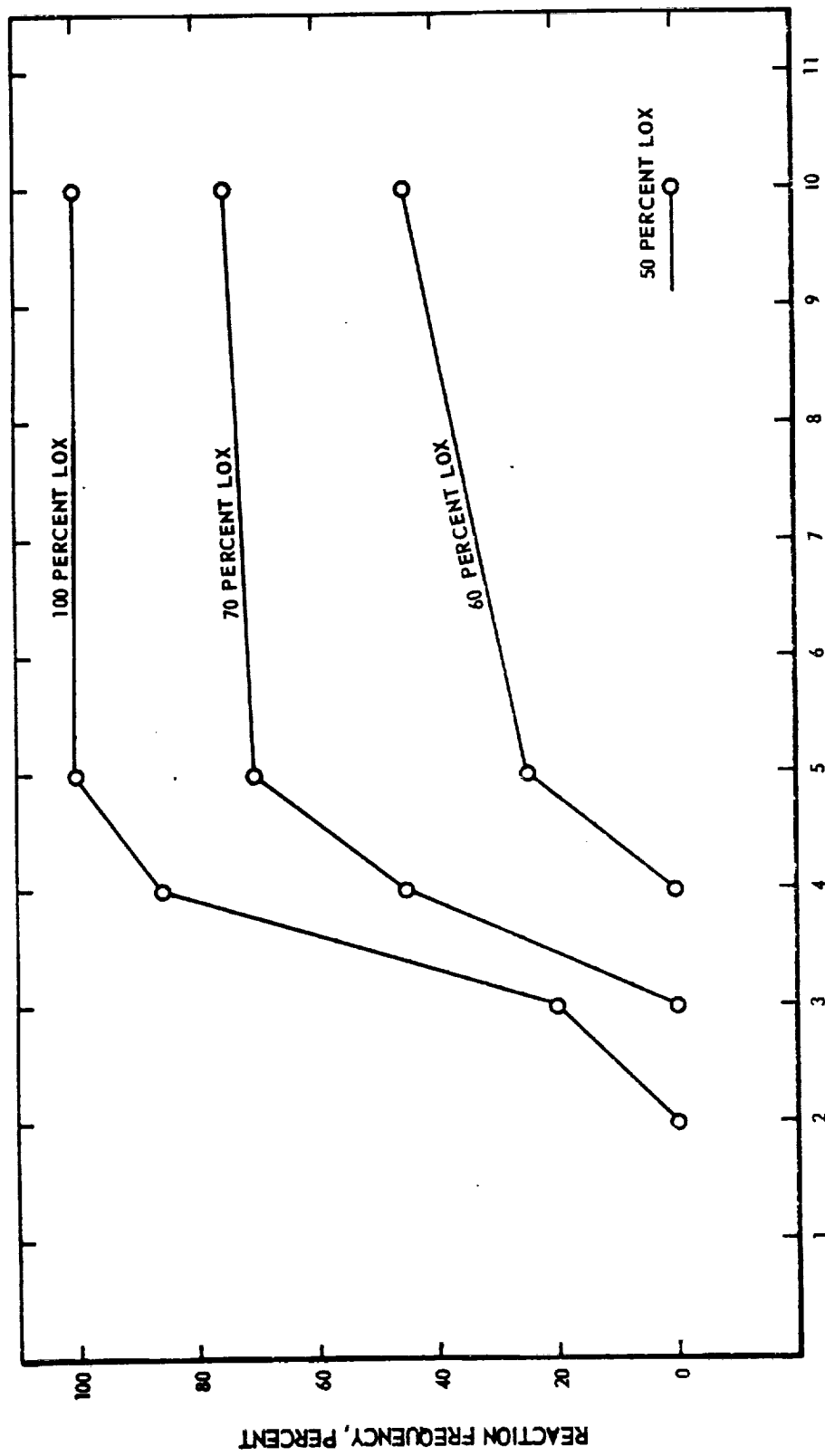


FIGURE 15. EFFECT OF LN<sub>2</sub> DILUTION ON LOX IMPACT SENSITIVITY OF MAGNOLIA FOAM 7015-1

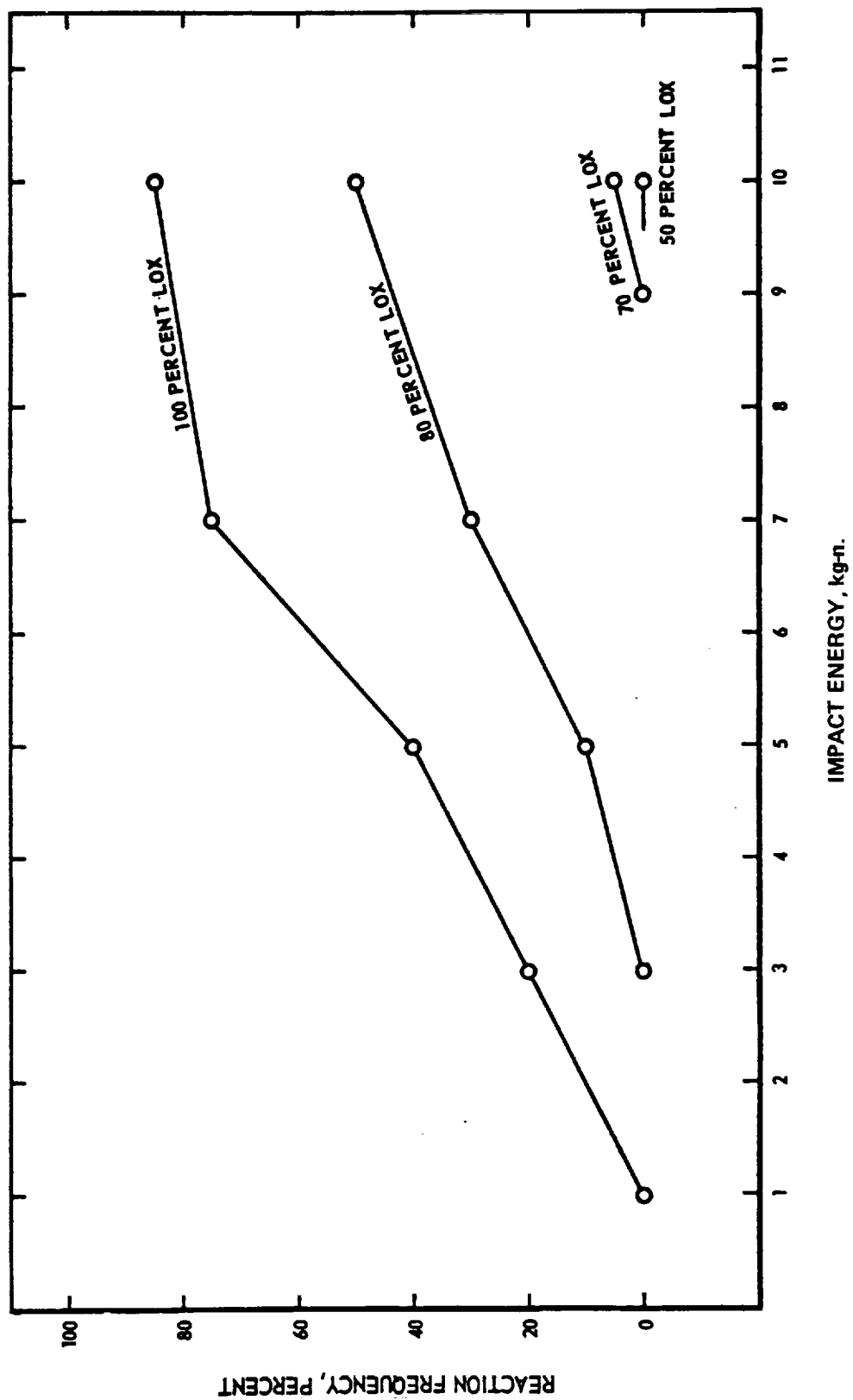


FIGURE 16. EFFECT OF LN<sub>2</sub> DILUTION ON LOX IMPACT SENSITIVITY  
OF CPR-20 INSULATION DENSITY - 4#/FT<sup>3</sup>

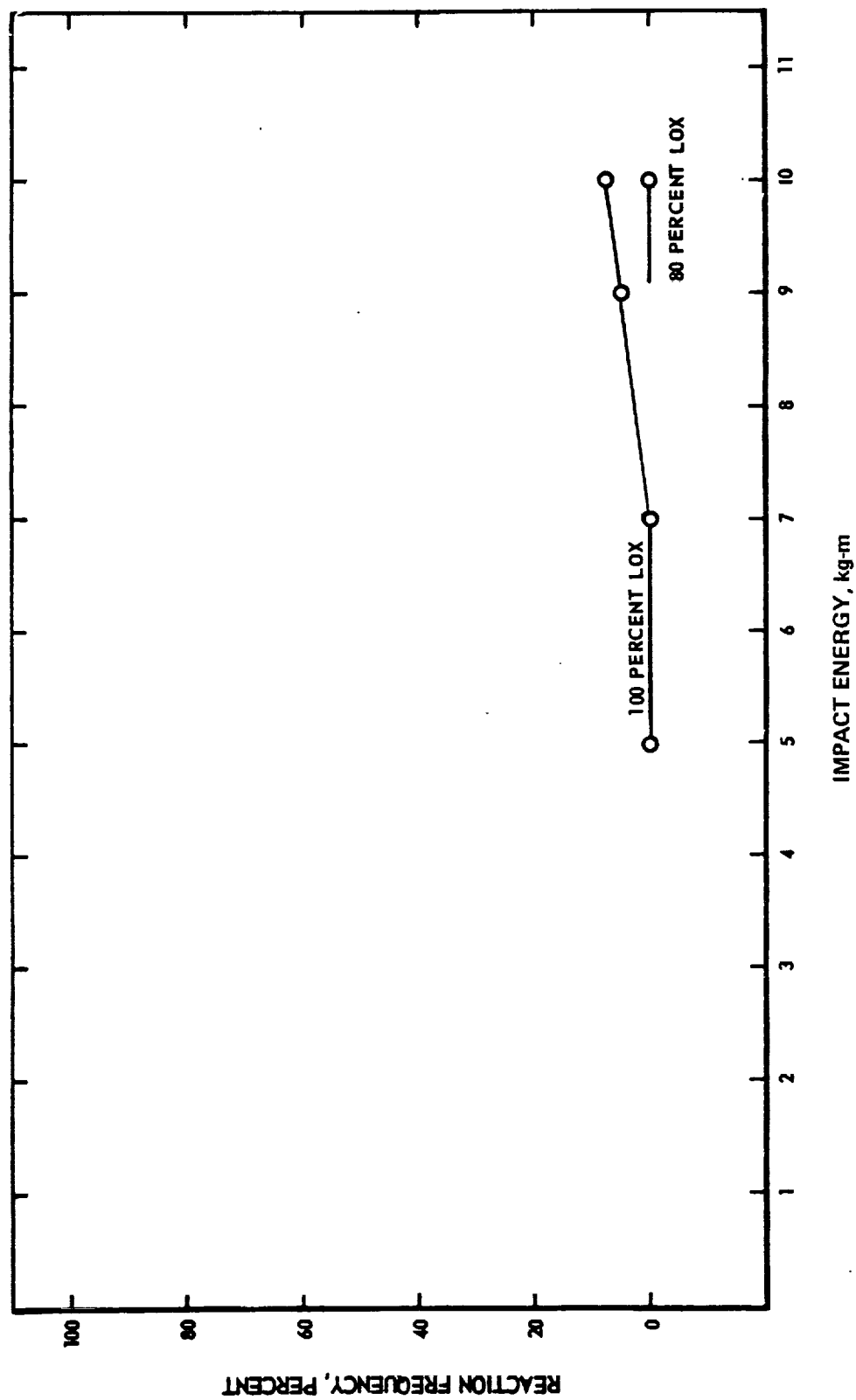


FIGURE 17. EFFECT OF LN<sub>2</sub> DILUTION ON LOX IMPACT SENSITIVITY  
OF CPR 1921-2 FOAM

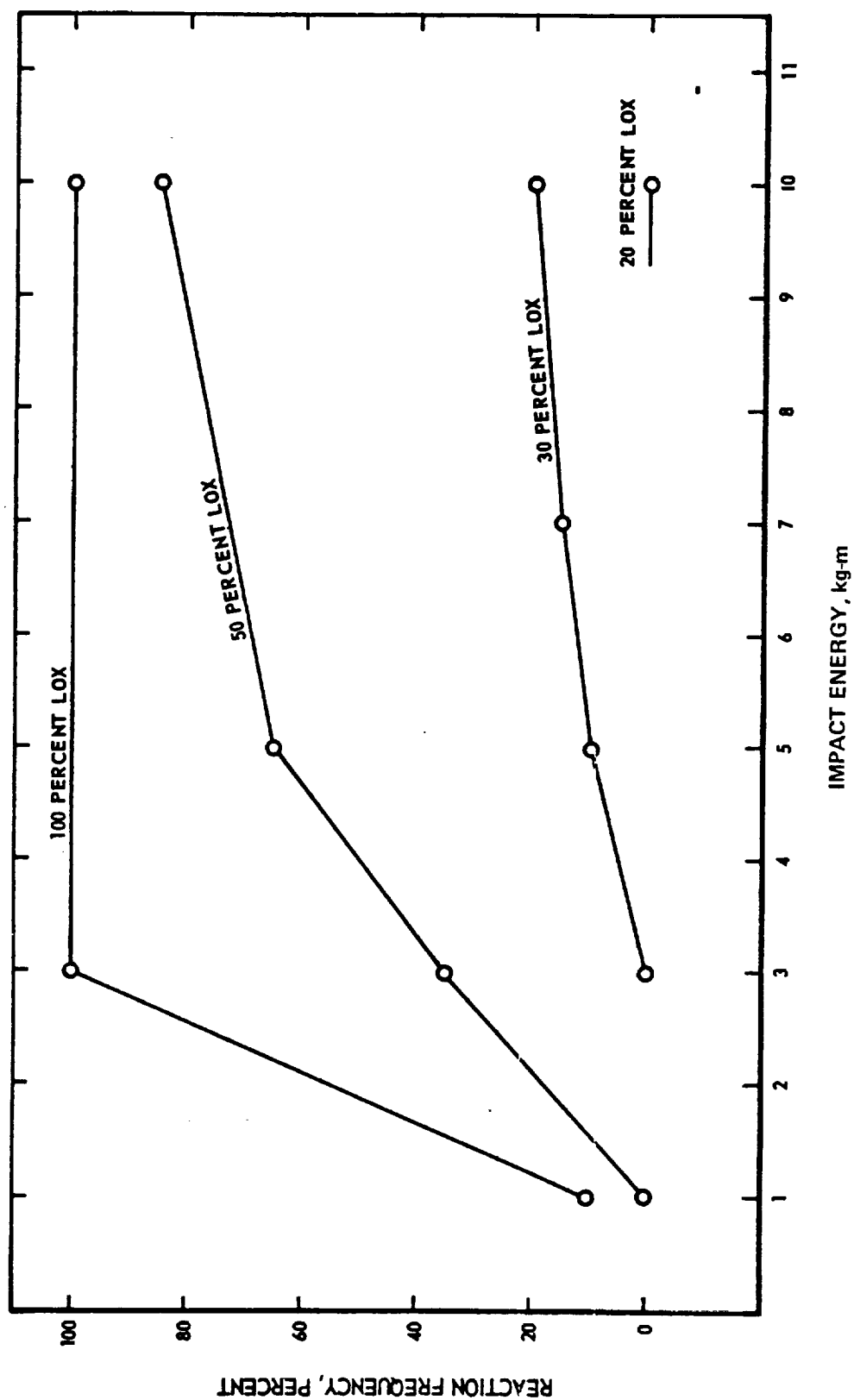


FIGURE 18. EFFECT OF LN<sub>2</sub> DILUTION ON LOX IMPACT SENSITIVITY OF HRP HONEYCOMB FILLED WITH CPR

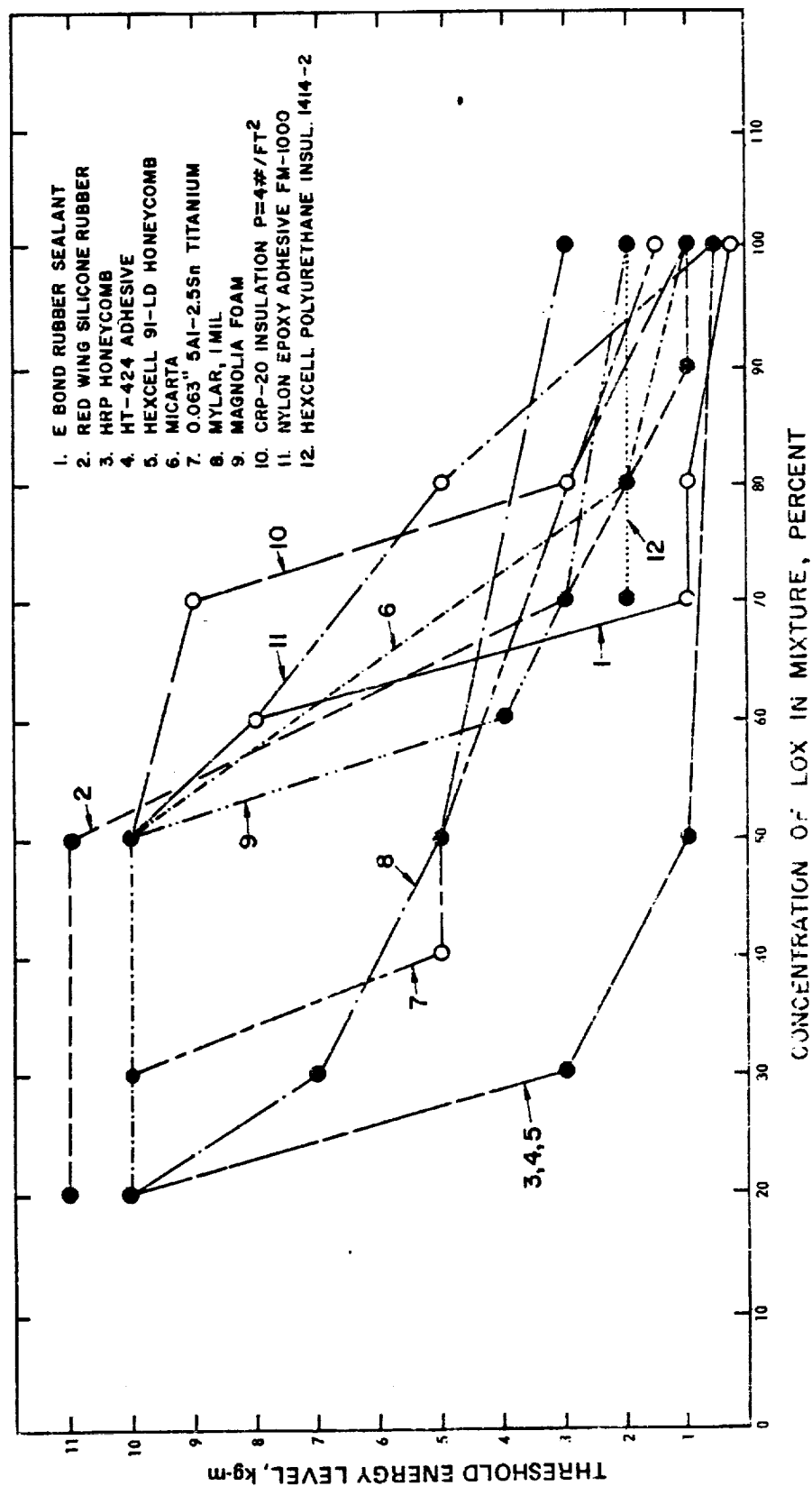


FIGURE 19. EFFECT OF IN<sub>2</sub> DILUTION ON THRESHOLD VALUES FOR VARIOUS MATERIALS



are characteristic of the individual materials. However, addition of 8 percent of  $\text{LN}_2$  to the LOX generally resulted in a decrease in the threshold energy level of roughly 1 kg-m.

Even highly sensitive materials apparently did not react in 20/80 mixtures (liquid air). However, reactions were noted with several materials at only slightly greater LOX concentrations (30/70), and it is possible that other materials would react with liquid air under suitable stimuli.

The second study "Preliminary Investigation of Fire and Explosion Hazards Associated with S-II Insulation" NASA TMX-53144 by Key and Gayle (Ref.9) demonstrated the possibility of obtaining this condition in an actual insulation system. A number of polytetrafluoroethylene, chlorofluorocarbon, and polyfluorinated ethylene propylene electrical insulations have been evaluated. A word of caution regarding electrical insulation is in order. The reactivity of electrical insulations of this type is dependent on processing, color code pigments and cleaning; therefore, it is mandatory that all electrical insulations be batch-tested to insure compatibility with LOX/GOX. It is also hazardous to assume satisfactory by similarity of electrical insulation unless each manufacturer's product is identical.

#### Elastomers, Plastics and Adhesives (Table IV)

Elastomers - All natural and non-fluorinated synthetic rubbers evaluated to date, including a number of silicone elastomers, have proven impact sensitive to varying degrees. The most generally satisfactory elastomers tested to date have been plasticized Kel-F, Fluoral, and Viton A. However, the impact sensitivity of these materials varies markedly with the nature and extent of plasticizer and additives used. Thus, batchwise testing per MSFC-SPEC-106B is necessary to insure LOX compatibility of these elastomers.

Plastics - Most common plastics are impact sensitive to varying degrees. All phenolic plastics tested to date have proven impact sensitive. Polyethylene, Nylon and Tedlar are not recommended.

During the past 15 years, various types and thicknesses of Mylar have been evaluated for compatibility with LOX by the procedure described in MSFC-SPEC-106B. Sample thicknesses ranged from 0.001 to 0.010 inch. Aluminum vapor coated Mylar and Mylar tapes also were tested.

All samples were impact sensitive at the acceptance level specified in MSFC-SPEC-106B, i. e., 10 kg-m.

The sensitivity of two new Dupont plastic films, types ML and H,

appears to vary directly with thickness. Therefore, the actual thickness proposed for application should be tested for sensitivity to impact in LOX.

Of all materials tested thus far, Teflon TFE (tetrafluoroethylene), Teflon FEP (Fluorinated ethylpropylene), Aclar unplasticized Kel-F, Halon TFE, Plaskon 2400 CTFE, and Vespel SP21 are the most insensitive to impact in LOX. One or more of these materials usually will suffice where a plastic is needed for engineering use. These materials normally are inert to LOX only as long as they are free of contamination, pigmentation, or fillers for reinforcement. Glass or asbestos fillers usually do not render such fluorocarbon materials sensitive to LOX. The ratings listed in Table IV are for specific proprietary products evaluated.

It has been determined that most government and material specifications are not sufficient to insure that the material supplied is virgin, unfilled or undyed. Therefore, the ratings listed in Table IV for Kel-F, Teflon TFE, Teflon FEP, Halon, and Plaskon are generally "batch test" unless the material has a manufacturer's ID number and sufficient tests conducted to insure a satisfactory rating. Under no circumstances should a rating of satisfactory be inferred for all polytetrafluoroethylene, fluorinated ethylene propylene, or chlorotrifluorocarbon, regardless of vintage unless the specific manufacturer's/processor's product has been evaluated.

Adhesives and Tapes - No fully satisfactory adhesive has been found for LOX/OX use. All organic adhesives test evaluated were incompatible with the exception of Refset adhesives. These adhesives are Refset compounds dissolved in highly reactive solvents and care must be taken to insure complete cure and solvent removal prior to exposure to oxygen. These Refset adhesives do not have high bond strengths.

In particular, epoxy resins, polyurethanes, silicone cements are violently sensitive to impact and must be excluded completely from LOX service. All silicone adhesives that have been examined are impact sensitive. Due to this susceptibility of adhesives, all known pressure sensitive tapes are sensitive to impact, including "Teflon" and metal foil backed tapes. This sensitivity is manifested even when the tapes are applied to metal discs which would insure minimal contact between the adhesive and LOX.

Some inorganic cement types of "adhesives," i.e. Sauereisen and H Cement, are insensitive. However, these generally are sodium silicate based and provide only comparatively weak bonding, and are quite brittle. A dental cement (CuO, phosphoric acid base) reportedly has been used in some instances but is highly corrosive.

## Gaskets and Packing (Table V)

Gaskets - A common type of general purpose gasket material is composed of a fibrous or spongy material impregnated with natural rubber or a synthetic elastomer. Asbestos is a popular fiber source and is available in combination with virtually every common rubber or plastic. The inherent impact sensitivity of the particular binder employed thus is conferred to some extent upon the finished material. The impact sensitivity of these asbestos composites varies considerably from batch to batch but is usually significantly less than an equivalent thickness of the binder material. At best, however, these materials range from marginal to unacceptable, depending upon the binder composition and proportion.

The earlier statements on the effect of sample thickness, as originally deduced from tests on thread sealants and lubricants, also apply to these composite materials. "Allpax 500," an asbestos-synthetic rubber mixture as supplied by the manufacturer, gives an average of two fires or detonations per test series in the 1/16-inch thickness as compared with approximately fifteen reactions per series when tested in a 1/64-inch thickness.

It has been found that the impact sensitivity of these products can be lessened by impregnation with one of several chlorofluorocarbon oils. These fluids are highly insensitive to impact in LOX and, apparently, tend to quench the impact sensitivity of other materials capable of absorbing them. The "Allpax 500" product mentioned above is processed routinely at this installation for LOX service by controlled impregnation with a chlorofluorocarbon fluid. Post-treatment impact testing is done on each processed batch to verify the adequacy of the treatment. Details of this process and the circumstances prompting its development are described in another report (Ref. 7).

One sample of Fluorolube treated Allpax 500 gasket was evaluated 9 years after treatment and found insensitive to impact.

The most nonreactive, non-metallic materials - tetrafluoroethylene and chlorofluorocarbon - are difficult to utilize because of low temperatures, brittleness, cold flow, or other mechanical deficiencies. A wide variety of fluorocarbon based gasket material, filled with asbestos, ceramic or glass fibers for reinforcement are available commercially. Most of these would be candidates for gaskets in LOX/GOX systems and have physical sealing characteristics greatly improved over the parent plastic. Fluorogreen-E-600 and Rulon A are two filled fluorocarbons that have been used successfully in the Saturn program. Other type gaskets/seals such as Omniseal, Raco Seal, Naflex seals and K-seals (lead or gold coated) have also been used.

Packing - A large number of braided and solid "Teflon" packings has been found satisfactory. One asbestos type packing, "JM 177J7," generally is compatible and has a satisfactory record of service at this Center. At least one manufacturer, Crane Packing Company, processes and packages certain packings specifically for LOX service when requested. "Flexrock 420" also is used currently by MSFC.

Caution - It is stressed that even the recommended packing and gasket materials may vary in acceptability from one batch to another; therefore, samples from each batch intended for LOX service should be tested and qualified prior to use unless the specific compound number/vendor product has a rating of satisfactory. It is hazardous to assume that the product is satisfactory by similarity to another compound or product on the basis that it is filled fluorocarbon. Therefore, the ratings for gaskets and packings listed in this report apply only to the specific proprietary product test evaluated and it should not be inferred that similar products would be equally satisfactory unless they have been test evaluated. This is to insure that variations in manufacturer's processing methods do not introduce contamination or chemical incompatibility.

#### Metals, Alloys, Solders, and Surface Treatments (Table VI)

All ferrous and aluminum based alloys test evaluated to date by the procedures outlined in MSFC-SPEC-1063 have been found insensitive, provided requisite cleaning procedures and other safeguards are followed. However, it is the policy of the Materials Division to test evaluate each specific material to insure insensitivity. Application of metals (ferrous and aluminum alloys) in high pressures and temperatures should be evaluated prior to selection of a specific alloy/thickness.

Freshly abraded aluminum or aluminum which has been stripped of its protective oxide film is impact sensitive. Thus, although the natural oxide film on aluminum is sufficient to make it impact insensitive, any action which breaks or removes the film from aluminum while submerged in LOX constitutes a hazardous situation. Exactly such conditions are believed to have caused an explosion in a filter in a LOX ground supply line recently (Ref. 8). This was ascribed to loosening of mounting fixtures for some filter cartridges, which allowed chattering of the top of a stainless steel filter cartridge and an aluminum support plate. Since this condition was on the upstream side of the filter and small particles undoubtedly were present (because of the basic function of the filter), it was deduced that the explosion probably was initiated by abrasion of the surface of the aluminum by such particles while in contact with LOX. Because of the possibility of reoccurrence of these conditions in such

filters, it was recommended that the aluminum components therein be replaced by stainless steel.

It is stressed that the conditions required to cause explosions with aluminum and LOX are extremely severe. These findings do not detract in any way from the proven serviceability of aluminum alloys now in use for missile LOX tankage and piping, provided all such equipment has been cleaned and protected in accordance with applicable MSFC standards and maintained under such conditions. Test results showing that stainless steel wool and ordinary steel wool are impact sensitive reflect the greater amount of active surface available for chemical combination in these cases and do not detract from the proven serviceability of steels in massive shapes for LOX service. However, these results suggest caution in the use of metal wool for cleaning LOX hardware.

The inherent compatibility of common aluminum alloys is not affected adversely by anodizing or by two proprietary surface treatments, "Iridite" and "alodine," if they are sealed properly and not dyed. However, as shown in Table VI, samples of aluminum which had been anodized/dyed have proven to be impact sensitive. This sensitivity has generally been traced to specific dyes used and/or improper sealing after dyeing process. Any dyed aluminum or new processes of corrosion coating for aluminum alloys must be evaluated to insure LOX/GOX compatibility.

Zirconium, magnesium, tin and titanium alloys, and indium metal are generally incompatible with LOX/GOX.

All titanium alloys tested have been extremely sensitive to impact. Because of a special interest in this material, the reactivity of titanium with oxygen was studied by several test methods and under a variety of conditions associated with space vehicles. The impact sensitivity method was used to study the effects of surface treatments, coatings, and numerous other factors upon the reactivity. Punctures resulting from bullets, darts, pins, or artificial meteoroids usually caused explosions. Coatings which reduced titanium reactivity in impact or shock tests were not beneficial under puncture conditions. Aluminum and stainless steel failed to react on impact or puncture.

The shock stimuli produced by small detonator caps alone were sufficient to initiate explosive reaction of titanium in contact with oxygen. An extremely heavy shock was necessary to cause aluminum to react under the same test conditions, and stainless steel did not react under the most drastic shock conditions employed. The titanium/oxygen combination is considerably more susceptible to spark initiation than aluminum/oxygen. A detailed report on the "Reactivity of Titanium with Oxygen" has been issued separately (NASA-TR-R-180), (Ref. 5).

Electrodeposited coatings on steel generally are LOX compatible

(cadmium, copper, nickel, chrome). However, tin plated materials have been found to be impact sensitive.

A number of intermediate melting alloys have been evaluated and conditionally approved. All high melting silver solders tested have proven satisfactory.

Tin based solders and coatings containing in excess of approximately 5% tin are sensitive.

The problems incurred by not "batch testing" and assuming the materials are satisfactory by similarity is illustrated by the following examples.

1. A routine materials review of Saturn V contractors revealed that certain K-seals (manufactured by Harrison Manufacturing Company) used in LOX system had not been "batch tested" as specified in MSFC-SPEC-106B and an early issue of this report (TMX-985). This survey revealed that approximately 173 seals were in use. The most extensive use of unproven materials was associated with seals coated with K-6 alloy (designated CL and AL by contractor). K-6 alloy is basically a nickel-lead electroplate. Chemical analysis of various K-6 alloy specimens from various sources revealed that tin concentration could vary from as low as 0.1% tin to a maximum of almost 9%.

2. The other questionable seal application uncovered during this routine materials review was the seal commonly referred to as the PG-seal. This PG seal is a copper-gold-tin coating with tin being the surface coating. Although it was assumed PG type seals were satisfactory, the basic seal material had not been evaluated prior to use. This problem illustrates that the LOX/GOX requirement and batch/lot testing must be "tracked" and enforced to preclude surprises later on in the program.

#### Solvents, Cleaning Agents, and Miscellaneous (Table VII)

A considerable amount of test work has been done on LOX cleaning and degreasing products. The actual solvents generally employed for degreasing are not inherently sensitive to impact. However, it has been demonstrated that the evaporation of a sufficient quantity of a degreasing solvent can leave an impact sensitive residue. This is particularly true of highly stabilized grades of trichloroethylene. A series of samples was prepared by carefully evaporating appropriate aliquots of a solvent of predetermined residue content in order to yield 10, 5, 2.5, and 1 milligram quantities of residues in impact test cups. Results showed that as little as 1 mg. of residue in the test cup (bottom

area of approximately 0.4 in.<sup>2</sup>) is sufficient to cause detonations. Assuming such solvents conform to local requirements of a maximum of 20 milligrams of non-volatile residue per liter, the unrestricted evaporation of only 50 milliliters of solvent per 0.4 in.<sup>2</sup> (or 125 ml per in.<sup>2</sup>) of under-lying surface would be sufficient to produce a potentially hazardous condition in LOX service. This figure may vary considerably with the specific chemical nature of the residue. Thus, appropriate precautions should be taken to avoid situations that could give rise to the concentration and deposition of such residues within LOX handling equipment. Rigid quality control of the solvent is essential in minimizing this risk, and the entire degreasing system should be free of materials capable of solution or dispersion in the solvent, which may be later deposited in the equipment being cleaned.

Similarly, most detergents and other cleaning compounds are capable of forming impact sensitive deposits if they are not removed. Adequate rinsing of all LOX equipment after treatment with cleaning agents of this type is essential.

A number of other miscellaneous materials that have been tested for various reasons are summarized in Table VII. Some of the materials included here, due to incomplete identification or other uncertainties concerning their origin, conceivably would fall within categories surveyed earlier. A substantial number of these items (marked with an asterisk) are experimental products tested during a research program funded by this organization (at Frankford Arsenal), which was aimed at finding a "universal lubricant" (see page 4, second paragraph).

A previous report (Ref. 10) (IN-P&VE-M-65-3) "Preliminary Investigation of Explosive Hazards of Solvents in Contact with Liquid Oxygen" by C. F. Key and J. B. Gayle discussed the explosive hazards of selected solvents in contact with liquid oxygen. This study was undertaken after an incident with trichloroethylene and nitrogen tetroxide.

The results of this study indicate that many solvents react explosively when mixed with LOX and ignited with a high energy source. Therefore, it might appear, at least superficially, that the use of trichloroethylene for cleaning LOX hardware should be discontinued. However, it must be recognized that the "ideal" solvent, i.e., one having high solvent power, high vapor pressure, low viscosity, low non-volatile residue, negligible flammability, and negligible toxicity, is nonexistent. Therefore, the selection of trichloroethylene or any other solvent usually represents a compromise between the solvent capabilities and hazardous characteristics of available materials.

The only practical solution is to assess the hazards associated with any particular solvent application and to take adequate precautions to insure the safety of the operation. A more difficult task is to insure

that an initially safe operation does not become unsafe due to operational changes (e.g., a change in environment from air to gaseous oxygen or eliminating the requirement for complete removal of the solvent) or the relaxing of safety practices, particularly during long periods of incident free operation.

Table VII gives results of a number of paints, soaps, and detergents which are generally reactive. A number of pure compounds have been evaluated and conditionally approved. All of these compounds are violently reactive and their reactivity generally are not changed by altering sample thickness. The brominated compounds appear to be the least sensitive of these compounds. This is most likely due to the shielding action (steric hindrance) of the large bromide ion.

#### Dye Penetrants (Table VIII)

Dye penetrants are widely used for detection of cracks and other surface defects in materials. Normally, these are applied in liquid form and the excess wiped or washed off. Residual penetrant entrapped in defects renders these visible by normal or ultraviolet illumination.

After a dye penetrant system has been used for inspection of LOX hardware, no usual cleaning procedure is available which will insure complete removal of all components of the penetrant system from the surface and from any surface defects present. In some instances, reactions have been noted for aluminum castings and other objects after contact with a sensitive penetrant, followed by treatment with the recommended developer and emulsifier and also with various cleaning solutions. The development of satisfactory cleaning procedures is different because: the cleaning solution must have the same or a lesser surface tension than the penetrant, the penetrant must be readily removed by the cleaning solution, and a method must be employed which will show conclusively that all dye penetrant has been removed. The latter requirement is important because of the possibility that surface microfissures or pores could make even black-light checking techniques ineffective.

The extreme reactivity of dye penetrant is shown in quantitative studies described below:

Using Magnaflux Penetrant No. 137-115 as an example, an investigation was made of the ease of removal of dye penetrants and the minimum quantity of residue which will present a hazard. Samples of aluminum castings, sheet aluminum with fine scratches (125 wide x 200 deep), and sheet aluminum after grinding with an emery wheel were treated with penetrant, emulsifier, and developer in accordance with the manufacturer's directions. Tests also were made without the developer but with thorough water washing. In every case of the latter technique, the samples were



still highly sensitive to impact in LOX. Developing before rinsing assisted greatly in removing residual dye. However, even this treatment did not consistently render the surface impact insensitive to LOX.

This difficulty in cleaning is not surprising. Since the functional design of penetrants is to penetrate the slightest crevice, it is necessary to employ cleaning agents or techniques of even better penetration characteristics in order to effect efficient removal of residues.

By simply placing decreasing amounts of penetrant in the test cup and evaporating to dryness, it was found that residues (from Magnaflux 137-115 Penetrant) containing as little as 7.5 micrograms of dye still were sensitive to impact in LOX.

For these reasons, the Materials Division has disapproved the unqualified use of dye penetrants for inspection of LOX hardware. This position remains unchanged. However, when the intended application is not the inspection of an entire system, such as a completed tank, but rather the inspection of individual elements used in the manufacture of a tank before actual assembly, a careful review of the effect of other inspection methods must be made.

#### Development of Test Method

As an initial approach to the problem, dye penetrants were tested by the procedure for liquids or semi-liquids intended for use in LOX hardware as prescribed in MSFC-SPEC-106B. This consisted of freezing 1/2-cc volumes in the test cups and testing the frozen solids in the usual manner. Residues from 1/4-cc volumes also were evaluated to determine the effects of specimen thickness on test results. However, it was recognized that in normal use the dye penetrant would exist as a very thin film or residue. Therefore, further tests were made using the residues from 1/2-cc volumes of the penetrant evaporated either to dryness or to constant volume at 100°C. Both atmospheric drying and vacuum drying ovens were used. This method had the obvious disadvantage that some penetrants undergo sufficient thermal decomposition to alter their LOX compatibility. As an alternate approach, tests were made in which the penetrant was absorbed on 1/2-inch squares of 0.020-inch thick sheets of Novabestos, a commercial Teflon-asbestos fiber paper. However, the wettability of Novabestos by various penetrants differs appreciably from that of aluminum surfaces and this could influence the test results.

The method finally selected for testing consists of immersing vapor degreased, unsealed, sulfuric acid anodized aluminum 6061-T6 discs (11/16-inch diameter and 1/16-inch thick) in the penetrant for 15 minutes, then standing the discs on edge in a special fixture, and allowing

them to drain for 15 minutes to remove excess penetrant.\* The treated discs are transferred to the test cup and tested in accordance with 'SFC-SPEC-106B. For consistency and convenience, this procedure is used for testing not only the dye penetrant but each of the components of the penetrant system. Recent test data have shown that reactivity of dye penetrant components is effected drastically by anodizing time and current density. Therefore, it is extremely important that all discs be anodized for 30 minutes with current density specified in 'Mil-A-8625 Rev. A.

The results which were obtained by each of the preliminary test methods are shown in Table VII; results obtained by the anodized disc method are shown in Table VIII; also included in Table VIII are the results which were obtained by the anodized disc method using a drainage angle of 45 degrees and the results of the Novabestos method, which was used more extensively than any other preliminary method studies.

These data indicate minor differences in the rank of the relative sensitivity of various penetrant system components by the different test methods. This is consistent with the results of previous investigations which have indicated the necessity for rigid standardization of test equipment and procedures to insure reproducibility of results. However, there is a pronounced tendency for materials that are sensitive by one test method to be sensitive by the others, thus confirming the overall validity of results. Because of the close agreement of results shown in Table VIII, the selection of the final method was based primarily on the following considerations:

1. The anodized disc method more closely simulates the manner in which penetrant system components are applied in practice.
2. Novabestos is a proprietary product and, therefore, could be withdrawn from the market or altered at any time. Also, complete details of the manufacturing and quality control procedures which were used in the production of this material are not readily available.
3. Visual inspection indicated more uniform drainage of specimens at an angle of 90°.

Table VIII shows the ratings for various penetrant system components tested by the anodized disc method. In using these data for the selection of penetrants for various applications, it must be recognized that there are three types of penetrant systems:

\* This method is a modification of one suggested by Mr. J. R. Alburger, Shannon Luminous Materials Company, in a private communication dated March 3, 1964, to Dr. W. R. Lucas, Chief, Materials Division, 'SFC.

1. Water-based
2. Water-washable
3. Post-emulsifiable

Water-based penetrants are water soluble as the name implies and are removed by washing with water. The organic dyes used for water-washable penetrant systems are not inherently soluble; however, an emulsifier is incorporated in the penetrant solution which permits removal of the excess solution by water washing. Post-emulsifiable systems require a separate treatment with an emulsifier solution or, in some instances, with a cleaner or solvent to remove the excess penetrant solution. All three types require treatment of the surfaces with a developer after the removal of the excess penetrant solution and before inspection.

A review of the data shown in Table VIII indicates that several penetrant systems appear promising for use on LOX hardware. Thus, one or more systems of each of the three types indicated above have been found acceptable, although in some instances the water-based and water-washable systems were only compatible when they were used in greater dilution than the manufacturer recommended. With particular regard to the post-emulsifiable penetrant system, if the recommended emulsifier for a given system does not prove acceptable, it may be possible to use some other emulsifier, provided it affords adequate penetrant removal.

The selection of any particular penetrant system for inspection of LOX wetted surfaces should not be based on LOX impact test results alone, but also on a careful review of the inspection sensitivity required, and the cleaning procedures specified for post inspection assurance that all penetrant has been removed from the surface inspected.

TABLE I. LUBRICANTS

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/No. Tests	Energy Level Kg-M	Batch Or Jar Rating	Material Rating
Acrolon G Dry Film Lubricant	Acheson Colloids Company	4072	Colloidal graphite, isopropanol and Freon 11 and 12	Spray coat on stainless steel inserts		0/40	10	S	BT
Acrolon M Dry Film Lubricant	Acheson Colloids Company	4074	Colloidal molydisulfide, Freon 11 and 12, isopropanol and methylene chloride	Spray coat on stainless steel inserts		0/40	10	S	BT
Anderol Lubricant L-118	Lehigh Chemical Company	1445	Molybdenum disulphide and vehicle	Violent explosion	0.050	1/8 1/2 0/10	10 5 2	U U U	U U U
Anderol Grease L-182	Lehigh Chemical Company	1336							
Anderol Solvent Resistant Grease L-237	Lehigh Chemical Company	1452							
Anderol Synthetic Multi-Purpose Grease L-278	Lehigh Chemical Company	1446		Test halted because of reaction violence	0.050	2/5 1/15	10 5	U U	U U
Anderol Grease L-419	Lehigh Chemical Company	1338		Violent explosion	0.050	0/20	5	U	U
Anderol Low Temperature Oil L-451	Lehigh Chemical Company	1335							
Anderol Thixotropic Grease L-730	Lehigh Chemical Company	1443							
Anderol Synthetic Long Fiber Grease L-752	Lehigh Chemical Company	1447							
Anderol Synthetic Long Fiber Grease L-754	Lehigh Chemical Company	1444							
Anderol Grease (MIL-G-15793) L-793	Lehigh Chemical Company	875		Violent explosion	0.050	1/7 0/13	5 2	U U	U U
Anderol Grease L-795	Lehigh Chemical Company	1339							
Anderol Fluid X-1368	Lehigh Chemical Company	811	Halogenated hydrocarbon	Experimental product	0.050	0/20	10	I	BT
Apiezon L Grease	A.H. Thompson Company	739	Long chain aliphatic hydrocarbon		0.050	2/12 2/2 2/4	10 8 5	U U U	U U U

TABLE I. LUBRICANTS (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/ No. Tests	Energy Level kg/m	Batch or Jar Rating	Material Rating
Apiezon M Grease	A.H. Thompson Company	740	Long chain aliphatic		0.050	2/12	10	U	U
Apiezon Q Wax	A.H. Thompson Company	8726	Long chain aliphatic		0.050	10/20	10	U	U
Aroclor 1242	Monsanto Chemical Company	8215	Chlorinated biphenyl	Violent Reactions	0.050	11/34	10	U	U
Belco No-Flame Grease	Bel Ray Corporation	5845			0.050	1/20	10	I	I
Belco 1245 Grease	Bel Ray Corporation	5840	Polymers of trifluoro-vinyl chloride		0.050	0/20	10	S	BT
Belco 1260 Grease	Bel Ray Corporation	5846	Polymers of trifluoro-vinyl chloride		0.050	0/20	10	S	BT
Bestoil	Oster Manufacturing Company	5649		Violent Reaction	0.050	10/20 9/20 14/20 11/20 6/20 2/20	10 8 6 4 2 1	U U U U U U	U U U U U U
Bestoil	Oster Manufacturing Company	8442		Violent Reactions	0.050	51/100 43/100 51/100 41/100 22/100 21/100	10 8 6 4 2 1	U U U U U U	U U U U U U
CBS Dry Film Lubricant 5940	Columbia Broadcasting Company Laboratory	2723	Copper, silver, and molydisulfide	Coating on stainless steel inserts		0/19	10	BT	S
CBS Dry Film Lubricant CLD 5940	Columbia Broadcasting Company Laboratory	3797	Copper, silver, and molydisulfide	Applied to stainless steel inserts		0/20	10	S	S
Cellulube Oil 220	Celanese Corporation	1057		Violent reactions	0.050	2/5	10	U	U
Celvacene Light Vacuum Grease	Consolidated Electrodynamics Corporation	1788		Violent reactions	0.050	4/20	10	U	U
Chrysler-Chapman Processed Oil	Chrysler Corporation	9832			0.050	0/20	10	S	BT
Chrysler-Chapman Processed Oil	Chrysler Corporation	10281			0.050	0/20	10	S	BT
Cincool AL	Cincinnati Milling Products Company	4408	Hydrocarbon oil base		0.050	2/4 1/1 1/2 0/20	10 7 6 5	U U U U	U U U U
Compound Rust and Corrosion Inhibitor OIL 4-1-1-581		1616			0.050	3/20	10	U	U

TABLE I. LUBRICANTS (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/ No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
Conducto Lube Grease	Conducto Lube Company	600		Electrically conductive grease		2/5 1/4 1/6	10 5 1	U U U	U U U
Cosmolube Grease 1044	E.F. Houghton Company	1337		Violent explosion	0.050	1/1	10	U	U
Cosmolube No. 1 Grease	E.F. Houghton Company	793		Violent explosion	0.050	2/6	10	U	U
Cosmolube Grease 101	E.F. Houghton Company	794		Violent explosions	0.050	2/11	10	U	U
Cosmolube (MIL-L-4343A) 615	E.F. Houghton Company	798		Violent explosions	0.050	2/9 1/11	10 5	U U	U U
CTFE Polymer Oil	Hausser Research and Engineering Company	6765		Reprocessed Oil	0.5 ml	0/20	10	S	BT
CX-1 Lubricant	Kennedy Space Center	9156			0.050	14/20	10	U	U
Dag Dispersion Dip Coating 154	Acheson Colloids Company	3451	Colloidal graphite in alcohol	Applied to stainless steel inserts		0/20	10	I	I
Dag Dispersion 155	Acheson Colloids Company	3448	Colloidal graphite and Triclene D	Applied to stainless steel inserts		0/20	10	S	BT
Dag Dispersion 210	Acheson Colloids Company	3453	Colloidal molydisulfide in isopropyl alcohol	Applied to stainless steel inserts		4/20 2/5 0/20	10 5 3	U U U	U U U
Dag Dispersion 211	Acheson Colloids Company	3449	Colloidal molydisulfide in trichloroethylene	Applied to stainless steel inserts		0/20	10	S	BT
Dag Dispersion 217	Acheson Colloids Company	844	Graphite and organic vehicle	Violent explosion		1/10	10	U	U
Desco Formulation TF-48	Delta-Desco Company	9220	Fluorocarbon base	Stem packing lubricant	0.050	0/20	10	S	BT
Dow Corning Grease 3	Dow Corning Corporation	831	Silicone		0.050	2/6 4/10 1/14	10 8 5	U U U	U U U
Dow Corning Grease 4	Dow Corning Corporation	809	Silicone		0.050	3/13 1/17	10 5	U U	U U
Dow Corning Grease 5	Dow Corning Corporation	832	Silicone		0.050	2/2 2/6	10 5	U U	U U
Dow Corning Grease 6	Dow Corning Corporation	835	Silicone		0.050	2/3 1/17	10 5	U U	U U

TABLE I. LUBRICANTS (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/No. Tests	Energy Level Kg/in	Batch or Jar Rating	Material Rating
Dow Corning Grease 7	Dow Corning Corporation	930	Silicone		0.050	2/2 2/3 0/15	10 5 2	U U U	U U U
Dow Corning Grease 11	Dow Corning Corporation	445	Silicone		0.050	2/3 0/15	10 5	U U	U U
Dow Corning Grease 33 (Light Consistency)	Dow Corning Corporation	159	Silicone		0.050	2/11 1/6 0/20	10 5 3	U U U	U U U
DC-33 Grease (Light Consistency) Lot M-347	Dow Corning Corporation	8412	Silicone	Cell III	0.050	26/100 26/100 16/100 8/100 3/100 0/100	10 8 6 4 2 1	U U U U U U	U U U U U U
DC-33 Grease	Dow Corning Corporation	10333	Silicone		0.050	7/20	10	U	U
DC-33 Grease Lot M-347 (Light Consistency)	Dow Corning Corporation	7299 7300 7301 7303 7302	Silicone	Standard grease cups Standard grease cups Standard grease cups Standard grease cups Standard grease cups	0.050	4/20 3/20 1/20 1/20 0/20	10 7.62 5.54 4.16 3.46	U U U U U	U U U U U
DC-33 Grease Lot M-347 (Light Consistency)		7304 7305 7306 7308 7307		Two piece cups Two piece cups Two piece cups Two piece cups Two piece cups	0.050	6/20 5/20 2/20 1/20 0/20	10 7.62 5.54 4.16 3.46	U U U U U	U U U U U
Dow Corning 33 Grease	Dow Corning Corporation	5641	Silicone	Light consistency	0.050	5/20 5/20 3/20 3/20 0/20 0/20	10 8 6 4 2 1	U U U U U U	U U U U U U
Dow Corning Grease 41	Dow Corning Corporation	829	Silicone		0.050	2/20	10	U	U
Dow Corning Grease 44	Dow Corning Corporation	158	Silicone		0.050	2/20	10	U	U
Dow Corning Grease 55	Dow Corning Corporation	420	Silicone		0.050	1/2 1/6 0/8	10 5 2	U U U	U U U
Dow Corning Fluid 200 (200 cs)	Dow Corning Corporation	177	Silicone		0.050	7/20	10	U	U
Dow Corning Fluid 550	Dow Corning Corporation	838	Silicone		0.050	2/8	10	U	U

TABLE I. LUBRICANTS (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions No. Tests	Energy Level Kg-m	Batch or Jar Rating	Material Rating
Dow Corning Fluid 560	Dow Corning Corporation	4636	Silicone		0.050	6/20 7/20 2/20 2/20 0/20	10 5 4 3 1	U U U U U	U
Dow Corning Fluid 702	Dow Corning Corporation	383	Silicone		0.050	2/9 1/5	10 5	U U	U
Dow Corning Fluid 703	Dow Corning Corporation	361	Silicone		0.050	2/4	10	U	U
Dow Corning Fluid 710	Dow Corning Corporation	781	Silicone		0.050	2/6 2/4 2/20 0/20	10 5 3 2	U U U U	U
Dow Corning Fluid 710	Dow Corning Corporation	4730	Silicone		0.050	2/6 2/4 2/20 0/20	10 5 3 2	U U U U	U
Dow Corning Valve Seal A	Dow Corning Corporation	444	Silicone		0.050	2/20	10	U	U
Dow Corning High Vacuum Grease	Dow Corning Corporation	213	Silicone		0.050	10/20	10	U	U
Dow Corning Electric Motor Grease	Dow Corning Corporation	593	Silicone		0.050	1/6 1/20	10 5	U U	U
Dow Corning E-43112 (Lot B 1733-4)	Dow Corning Corporation	7431	Fluorodisilicone Fluorodisilicone 2	Experimental Compound	0.025 ml 0.050 ml	0/20 0/20	10 10	S S	1
Dow Corning E-32263-4-2	Dow Corning Corporation	7839	Fluorodisilicone		0.050	4/20 2/20 0/20 0/20 0/20	10 5.6 4.9 4.2 3.5	U U U U U	U
Dow Corning E-32263-4-3	Dow Corning Corporation	5905	Fluorodisilicone		0.050	7/20 3/20 1/20 0/20 0/20	10 5.6 4.9 4.2 3.5	U U U U U	U
Dynalene 701 (Oxytube)	Yon-Siam Manufacturing Company	1200	Cu-Cr plated arm plated A-2 steel		0.030	0/20	10	S	S
Dynalene 701 (Oxytube)	Yon-Siam Manufacturing Company	2310	Body ballbearing, ethyl acetate aluminum and ethyl acetate	Spray coating on stainless steel inserts		0/35	10	S	S



TABLE I. LUBRICANTS (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/ No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
Drilube 702 (Oxylube)	Drilube Company	1650	Molydisulfide in chromous and phosphoric acid		0.050	0/20	10	S	S
Drilube 703 (Oxylube)	Drilube Company	825	Molydisulfide in chromous and phosphoric acid		0.050	0/20	10	S	S
Drilube Dip Coating 90	Drilube Company	1368		Dip coating on stainless steel inserts		2/3 1/17	10 5	U U	U U
Drilube 822	Drilube Company	4490	Fluorinated silicone	Dispensed in polyethylene tube	0.010	5/20	10	U	U
Drilube 822	Drilube Company	4080	Fluorinated silicone	Dispensed in polyethylene tube	0.050	0/20	10	U	U
Drilube Type 822, MMS N306A (Lot 3034)	Drilube Company	7589	Fluorinated silicone	Twenty-four tubes tested; sensitivity varies from tube to tube	0.050	0-2/20	10	U	U
Dry Lube	V. B. Products, Incorporated	6641		On aluminum discs		0/20	10	I	I
Du Metal	Garlock Packing Company	814	Teflon and sintered metal	For bearing surfaces	0.063	0/20	10	S	BT
Dumore "O" Cool Bearing Oil	Dumore Company	1334			0.050	1/1 1/3	10 5	U U	U U
Duo Vacuum Pump Oil	Welch Scientific Company	376			0.050	1/9 0/11	10 7	U U	U U
Ecolube Dry Film Lubricant	Everlube Corporation	7824	Organic bonded dry film lubricant	Air dried 45 min. 1 hour at 400° F	0.008	19/20	10	U	U
Electrofilm Lubribond A	Electrofilm, Incorporated	9430	Organic bonded molydisulfide and graphite		0.005	8/20	10	U	U
Electrofilm Lubribond A	Electrofilm, Incorporated	4433	Resin bonded dry film lubricant	Air dry. Spray coat on stainless steel inserts		3/20 2/20 0/20	10 5 3	U U U	U U U
Electrofilm Lubribond B (Batch 171042, 3-9-64)	Electrofilm, Incorporated	5874	Dry film lubricant with resin binder	Stainless steel inserts dipped and air dried		10/20 4/20 7/20 7/20 0/20 0/20	10 10 6 4 2 1	U U U U U U	U U U U U U
Electrofilm Lubribond M	Electrofilm, Incorporated	6651	Dry film lubricant in a volatile carrier	Sample sprayed on stainless steel inserts		0/20	10	S	BT

TABLE 1. LUBRICANTS (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/ No. Tests	Energy Level Kg.m	Batch or Jar Rating	Material Rating
Electrofilm Lube-Lok M-1266	Electrofilm, Incorporated	5872		Stainless steel inserts dipped and air dried		0/20	10	S	BT
Electrofilm Lubribond M	Electrofilm, Incorporated	4432	Spray bomb dry film lubricant	Air dry. Spray coat on stainless steel inserts		0/20	10	S	BT
Electro-Moly Powder Grade 1	Electrofilm, Incorporated	4625	Molybdenum disulfide solid lubricant	Stainless steel inserts used		0/20	10	S	S
Electro-Moly Powder Grade 2	Electrofilm, Incorporated	4624	Molydisulfide powder	Stainless steel inserts used		0/20	10	S	S
Electro-Moly Powder Grade 2	Electrofilm, Incorporated	6647	Molydisulfide powder	Stainless steel inserts used		0/20	10	S	S
Electrofilm 66-C	Electrofilm, Incorporated	1310	Molydisulfide and organic vehicle	Spray coating		1/80	10	S	BT
Electrofilm 17-S	Electrofilm, Incorporated	981	Solid film lubricant with thermosetting resin			2/20	10	U	U
Electrofilm 99A	Electrofilm, Incorporated	4426	Resin bonded solid film lubricant	Dip coat on stainless steel inserts		2/60	10	U	U
Spray Bomb Lubricant G 7.8 in A.C. Propellant Freon 12	Electrofilm, Incorporated	4425		Dip coat on stainless steel inserts		0/20	10	S	BT
Electrofilm 1000	Electrofilm, Incorporated	535	Ceramic bonded molydisulfide	Spray coating		0/20	10	U	U
Electrofilm 1005 (Lot No. 149532)	Electrofilm, Incorporated	4431	Ceramic-bonded molydisulfide solid film lubricant	Dip coat on stainless steel inserts		0/20	10	S	BT
Electrofilm 2006	Electrofilm, Incorporated	534	Molydisulfide, synthetic graphite with silicone and formaldehyde resins	Violent explosions		2/2 2/2 1/3	10 5 3	U U U	U U U
Electrofilm Lube-Lok 2306	Electrofilm, Incorporated	6647	Inorganic bonded molydisulfide	Stainless steel inserts	Smear	0/20	10	S	BT
Electrofilm Lube-Lok 2306 (Batch 1678)	Electrofilm, Incorporated	5867	Inorganic bonded molydisulfide	Stainless steel inserts dipped and air dried		0/20 0/20	11.3 10	S S	BT BT
Electrofilm Lube-Lok No. 2306 (Lot No. 146031)	Electrofilm, Incorporated	4429	Inorganic-bonded molydisulfide	Dip coat on stainless steel inserts		0/20	10	S	BT
Electrofilm Lube-Lok 2396	Electrofilm, Incorporated	4256	Molydisulfide and graphite with sodium silicate	Coating applied to stainless steel inserts	0.001	0/40	10	S	BT
Electrofilm Lube-Lok 2396 (Batch 1459)	Electrofilm, Incorporated	5863	Molydisulfide-graphite with sodium silicate	Stainless steel inserts dipped and air dried		0/20 0/20	11.3 10	S S	BT BT

TABLE I. LUBRICANTS (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/ No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
Electrofilm Lube-Lok 2396 (Batch 145931)	Electrofilm, Incorporated	6648	Molydisulfide graphite with sodium silicate	Stainless steel inserts	Smear	0/20	10	S	BT
Electrofilm Lube-Lok 2406 (Batch 1711)	Electrofilm, Incorporated	5865	Inorganic bonded dry film lubricant	Stainless steel inserts dipped and air dried		0/20 0/20	11.3 10	S	BT
Electrofilm Lube-Lok 2406 (Batch 171142)	Electrofilm, Incorporated	6650		Stainless steel inserts	Smear	0/20	10	S	BT
Electrofilm 4396	Electrofilm, Incorporated	2724	Molydisulfide and graphite with vinyl binder		0.001	7/20 4/20 3/20 0/20	10 5 3 2	U U U U	U U U U
Electrofilm 5396, Diluted (Batch 203353)	Electrofilm, Incorporated	7380	Dry film lubricant with resin binder	Brushed on stainless steel inserts		2/20 1/20 0/20 0/20 0/20	10 9 8.31 7.62 6.93	U U U U U	U U U U U
Electrofilm 5396	Electrofilm, Incorporated	4430	Resin bonded solid film lubricant	Dip coat on stainless steel inserts		3/20	10	U	U
Everlube Dry Film Lube 811	Everlube Corporation	6971	Molydisulfide and sodium silicate binder	Stainless steel inserts brush coated, 24 hours air dry		0/20	10	S	S
Everlube Dry Film Lube 811 (Batch 020905)	Everlube Corporation	7361	Molydisulfide and sodium silicate binder	Stainless steel inserts dipped and air dried (1-inch and 2-inch anvil used)		0/20	10	S	S
Everlube 811	Everlube Corporation	1829	Molydisulfide and sodium silicate	Dip coating, cured at 400° F		0/20	10	S	S
Everlube 811 (Sample No. 1)	Everlube Corporation	5417	Dry film lubricant consisting of molydisulfide and inorganic binder	Dip coating on stainless steel inserts		0/20	10	S	S
Everlube 811 (Sample No. 2)	Everlube Corporation	5418	Dry film lubricant consisting of molydisulfide and inorganic binder	Dip coating on stainless steel inserts		0/20	10	S	S
Everlube 811-B2	Everlube Corporation	4424	Dry film lubricant consisting of molydisulfide and inorganic binder	Dip coating on stainless steel inserts		0/20	10	S	S

TABLE I. LUBRICANTS (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
Lverlube 811B	Lverlube Corporation	4306	Molydisulfide and sodium silicate	Coating applied to stainless steel inserts	0.050	0/20	10	S	S
Esso Grease M-100 Super MIL ASU	Esso Oil Company	1317				3/10 1/10	10 5	U U	U U
Fel Pro C-100	Felt Products Company	3761	Molydisulfide and organic vehicle		0.010	2/3 1/4 1/3 1/5 0/7	10 4 3 2 1	U U U U U	U U U U U
Flexonic Bearing P/N 6080-295-60	Garlock Packing Company	7208	Lead impregnated Teflon with copper backing		0.121	0/20	10	S	BT
Fluid Dome P/N A-15431-76	Gilmore Industries	7944		Violent	0.050	7/20	10	U	U
Fluorocarbon Lubricant 95-1 (Lot 12)	Dixon Corporation	5572	Fluorocarbon, Teflon filled		0.050	0/20	10	S	BT
Fluorocarbon Lubricant 95-1 (Lot 12)	Dixon Corporation	5571			0.010	0/20	10	S	BT
Fluorocarbon Lubricant No. 95-1 (Tube 3)	Dixon Corporation	7447	Fluorocarbon	Three tubes tested	0.050	0/20	10	S	BT
Fluoro-Chem A0369 (Oil)	Halocarbon Products Corporation	6969	Chlorofluorocarbon		0.5 ml	0/20	10	S	BT
Fluorochemical FC-75	Minnesota Mining and Manufacturing Company	448	Fluorinated cyclic ether		0.050	0/20	10	S	S
Fluorochemical FC-101	Minnesota Mining and Manufacturing Company	939			0.050	0/20	10	S	S
Fluorochemical FC-43	Minnesota Mining and Manufacturing Company	447	Heptafluoro-tributylamine		0.050	0/20	10	S	S
Fluorinated Grease	Minnesota Mining and Manufacturing Company	2149			0.005	0/20	10	S	S
Fluorochemical FX-45	Minnesota Mining and Manufacturing Company	3233			0.050	0/20	10	S	S
Fluorolube FS-5	Hooker Chemical Company	8257	Chlorofluorocarbon		0.050	0/20	10	S	S
Fluorolube FS-5	Hooker Chemical Company		Chlorofluorocarbon		0.5 ml	0/20	10	S	S
Fluorolube T-45	Hooker Chemical Company	1173	Chlorofluorocarbon		0.050	0/20	10	S	S

TABLE I. LUBRICANTS (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/ No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
Fluorolube T-80	Hooker Chemical Company	9895	Chlorofluorocarbon	Three batches tested Four batches tested Taken from Allpax bath Taken from Allpax bath	0.050	0/20	10	S	S
Fluorolube T-80	Hooker Chemical Company	1852	Chlorofluorocarbon		0.050	0/60	10	S	S
Fluorolube T-80	Hooker Chemical Company	3335	From Allpax treating bath		0.050	0/20	10	S	S
Fluorolube T-80	Hooker Chemical Company	6756	Chlorofluorocarbon		0.5 ml	0/20	10	S	S
Fluorolube T-80	Hooker Chemical Company	6972	Chlorofluorocarbon	Taken from Allpax bath  Taken from Allpax bath	0.5 ml	0/20	10	S	S
Fluorolube T-80 CS-27-63	Hooker Chemical Company	4663	Chlorofluorocarbon		0.050	0/20	10	S	S
Fluorolube T-80	Hooker Chemical Company	5892	Chlorofluorocarbon		0.5 ml	0/20	10	S	S
Fluorolube HO-125	Hooker Chemical Company	5878	Chlorofluorocarbon		0.5 ml	0/20	10	S	S
Fluorolube HO-125	Hooker Chemical Company	4827	Chlorofluorocarbon	Two batches tested	0.5 ml	0/20	10	S	S
Fluorolube MO-10	Hooker Chemical Company	5891	Chlorofluorocarbon		0.050	0/20	10	S	S
Fluorolube GR-544	Hooker Chemical Company	2208	Chlorofluorocarbon		0.050	0/20	10	S	S
Fluorolube LG	Hooker Chemical Company	3876	Chlorofluorocarbon		0.050	0/20	10	S	S
Fluorolube GR-362	Hooker Chemical Company	437	Chlorofluorocarbon	Two batches tested	0.050	0/20	10	S	S
Fluorolube GR-362	Hooker Chemical Company	2528	Chlorofluorocarbon		0.050	0/20	10	S	S
Fluorolube S-30 (Lot No. 2-7-63)	Hooker Chemical Company	4422	Chlorofluorocarbon		0.050	0/20	10	S	S
Fluorolube S-30 (Lot No. 2-7-63)	Hooker Chemical Company	4355	Chlorofluorocarbon		0.050	0/20	10	S	S
Fluorolube 350	Hooker Chemical Company	3760	Chlorofluorocarbon	Two batches tested	0.050	0/20	10	S	S
Fluorolube 350 (Lot No. 6-7-62)	Hooker Chemical Company	4423	Chlorofluorocarbon		0.050	0/20	10	S	S
Fluorosilicone Fluid No. 1	Dow Corning Corporation	6997 6998 6999 7181	Fluorosilicone		0.5 ml	5/20 3/20 2/20 3/20	10 8 6 4	U	U
Fluorosilicone Fluid No. 2	Dow Corning Corporation	6996 7182 7183	Fluorosilicone		0.5 ml	2/20 3/20 1/20	10 8 6	U	U
Fluorosilicone Fluid No. 3	Dow Corning Corporation	6953 7184 7185 7186	Fluorosilicone		0.5 ml	3/40 2/20 3/20 2/20	10 10 8 6	U	U

TABLE I. LUBRICANTS (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/ No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
Fluorosilicone Fluid No. 4	Dow Corning Corporation	6995	Fluorosilicone		0.5 ml	0/20	10	S	I
Fluorosilicone Fluid No. 5	Dow Corning Corporation	6994 7188	Fluorosilicone		0.5 ml	2/24 0/20	10 8	U	U
Fluorosilicone Fluid No. 6	Dow Corning Corporation	6993 7189	Fluorosilicone		0.5 ml	2/20 0/20	10 8	U	U
Fluorosilicone Fluid No. 7	Dow Corning Corporation	6992	Fluorosilicone		0.5 ml	0/20	10	S	I
Fluorosilicone Fluid No. 8	Dow Corning Corporation	6991 7190 7191	Fluorosilicone		0.5 ml	1/20 2/20 1/20	10 8 6	U	U
FS-1265, Lot 49, 10,000cs	Dow Corning Corporation	5830	Fluorosilicone		0.5 ml	1/80	10	S	U
FS-1265, Lot 58, 10,000cs	Dow Corning Corporation	6261	Fluorosilicone		0.5 ml	4/20	10	U	U
FS-1265, Lot 73, 10,000cs	Dow Corning Corporation	6454	Fluorosilicone		0.5 ml	6/20	10	U	U
FS-1265, Lot E-322-58	Dow Corning Corporation	7581 7580 7579 7578 7577 7576	Fluorosilicone Fluorosilicone Fluorosilicone Fluorosilicone Fluorosilicone Fluorosilicone	Sample No. G Sample No. D Sample No. C Sample No. B Sample No. A Sample No. A	0.5 ml 0.5 ml 0.5 ml 0.5 ml 0.5 ml 0.5 ml	3/20 3/20 2/20 0/20 3/20 1/20	10 10 10 10 10 10	U U U S U I	U U U U U U
FS1265 (Lot No. 23) Jar No. 1	Dow Corning Corporation	4637	Fluorosilicone oil	Viscosity 200 cs at 25°C	0.050	2/26 1/20 3/20 1/20	10 5 4 3	U U U U	U U U U
FS-1265, Lot F-32262M	Dow Corning Corporation	7657	Fluorosilicone		0.050	2/20	10	U	U
FS-1265, Lot E-32262N	Dow Corning Corporation	7658	Fluorosilicone		0.050	0/20	10	S	U
XF-1-0184 Fluid (Lot 28) Jar No. 1	Dow Corning Corporation	4865	Fluorinated silicone		0.050	5/20 7/20 1/20 0/20	10 5 4 3	U U U U	U U U U
XF-1-0266 (Lot 35)	Dow Corning Corporation	5037	Fluorinated silicone	Viscosity 300 cs at 25°C	0.050	2/20 3/20 1/20 0/20	10 8 5 4	U U U U	U U U U
XF-1-0267 (Lot 34)	Dow Corning Corporation	5031	Fluorinated silicone	Viscosity 1000 cs at 25°C	0.050	4/60 1/20 0/20	10 9 8	U U U	U U U

TABLE I. LUBRICANTS (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
XF-4-7012 Fluid (Lot 1-9) Jar No. 1	Dow Corning Corporation	4629	Fluorinated silicone		0.050	9/20 6/20 2/20 0/20	10 5 4 3	U U U U	U
XG-5-0032 (Lot 1)	Dow Corning Corporation	5295	FSI 265 and silica		0.050	2/60	10	U	U
XG-5-0033 (Lot 1)	Dow Corning Corporation	5291	FSI 265 and ASU thickener		0.050	2/40	10	U	U
XG-5-0034 (Lot 1)	Dow Corning Corporation	5293	FSI 265 and Teflon		0.050	2/60	10	U	U
FSI 265 (Lot 26) Jar No. 1	Dow Corning Corporation	4634	Fluorosilicone	Viscosity 300 cs at 25°C	0.050	2/20 5/20 3/20 0/20	10 5 4 3	U U U U	U
FSI 265 (Lot 34) Jar No. 1	Dow Corning Corporation	4646	Fluorosilicone	Viscosity 1000 cs at 25°C	0.050	3/60 0/20 0/20 3/20 0/20	10 9 8 5 3	U U U U U	U
FSI 265 (Lot 34) Jar No. 2	Dow Corning Corporation	4642	Fluorosilicone	Viscosity 1000 cs at 25°C	0.050	2/60 0/20 0/20 0/20	10 8 6 5	U U U U	U
FSI 265 (Lot Y535) Jar No. 1	Dow Corning Corporation	4654	Fluorosilicone	Viscosity 140 cs at 25°C	0.050	4/20 6/20 1/20	10 5 4	U U U	U
FSI 265 (Lot Y535) Jar No. 2	Dow Corning Corporation	4650	Fluorosilicone	Viscosity 140 cs at 25°C	0.050	2/9 1/33 2/20 0/20	10 5 4 3	U U U U	U
FSI 265 (Lot Y540)	Dow Corning Corporation	4843	Fluorosilicone	Viscosity 10,000 cs at 25°C	0.025	1/60	10	S	U
FSI 265 (Lot Y540)	Dow Corning Corporation	4628	Fluorosilicone	Viscosity 10,000 cs at 25°C	0.050	0/40	10	S	U
FSI 280 (Lot 1D)	Dow Corning Corporation	4620	Fluorosilicone	Glass jar	0.050	2/28	10	U	U
FSI 280 (Lot 2F)	Dow Corning Corporation	4785	Fluorosilicone	Glass jar	0.050	0/20	10	S	U
FSI 280 (Lot 3F)	Dow Corning Corporation	4784	Fluorosilicone	Glass jar	0.050	2/44	10	U	U

TABLE I. LUBRICANTS (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/ No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
FS-1280 (Lot 5H)	Dow Corning Corporation	4782	Fluorosilicone	Glass jar	0.050	2/25	10	U	U
FS-1280 (Lot 12)	Dow Corning Corporation	4871	Fluorosilicone	Glass jar	0.050	2/38	10	U	U
FS-1280, Lot 26	Dow Corning Corporation	6008	Fluorosilicone		0.050	0/20	10	S	U
FS-1280, Lot 36, Tube 1	Dow Corning Corporation	5651	Fluorosilicone		0.050	0/20	10	S	U
FS-1280, Lot 36, Tube 2	Dow Corning Corporation	5650	Fluorosilicone		0.050	0/20	10	S	U
FS-1281	Dow Corning Corporation	6207	Fluorosilicone		0.050	0/20	10	S	U
FS-1281, Lot 27, Jar No. 1	Dow Corning Corporation	6009	Fluorosilicone		0.050	3/20	10	U	JT
FS-1281, Lot 31	Dow Corning Corporation	5947	Fluorosilicone		0.050	6/20	10	U	JT
FS-1281, Lot 32	Dow Corning Corporation	6036	Fluorosilicone		0.050	0/20	10	S	JT
FS-1281, Lot 33	Dow Corning Corporation	7000	Fluorosilicone		0.050	0/20	10	S	JT
FS-1281, Lot 28	Dow Corning Corporation	3621	Fluorosilicone	Sensitivity varies from jar to jar	0.050	0-5/20	10		JT
FS-1281, Lot 28	Dow Corning Corporation	4308	Fluorosilicone		0.005	4/9 4/9 3/24 1/11	10 5 3 1	U U U U	JT JT JT JT
FS-1281, Lot 35, Jar B	Dow Corning Corporation	7906	Fluorosilicone		0.050	11/200	10	U	JT
FS-1281, Lot 36, Jars ME-5 to ME-15	Dow Corning Corporation	8089	Fluorosilicone	Three jars accepted	0.050	0-3/20	10		JT
FS-1281, Lot 35, Jars KSC-108 to KSC-111	Dow Corning Corporation	10022	Fluorosilicone	Two jars accepted	0.050	0-5/20	10		JT
FS-1281, Lot 36, Jars CB-53 to CB-73	Dow Corning Corporation	8178	Fluorosilicone	Eight jars accepted	0.050	0-3/20	10		JT
FS-1281, Lot 37, Jars KSC-4 to KSC-48	Dow Corning Corporation	7677	Fluorosilicone	Twenty-five jars accepted	0.050	6-5/20	10		JT
FS-1281, Lot 37, Jars C-350 to C-352	Dow Corning Corporation	7834	Fluorosilicone		0.050	9/100	10		JT
FS-1281, Lot 37, Jars AR-2 to AR-11	Dow Corning Corporation	8152	Fluorosilicone	One jar accepted	0.050	0-2/20	10		JT
		7847	Fluorosilicone	Five jars accepted	0.050	0-3/20	10		JT



TABLE 1. LUBRICANTS (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
FS-1281, Lot 38, Jars CB-74 to CB-193	Dow Corning Corporation	8373	Fluorosilicone	Twenty-two jars accepted	0.050	0-5/20	10	-	JT
FS-1281, Lot 38, Jars ME-17 to ME-28	Dow Corning Corporation	8239	Fluorosilicone	Three jars accepted	0.050	0-3/20	10	-	JT
FS-1281, Lot 38, Jars AR-1 to AR-10	Dow Corning Corporation	8698	Fluorosilicone	Six jars accepted	0.050	0-3/20	10	-	JT
FS-1281, Lot 39, Jar DC-1	Dow Corning Corporation	7881	Fluorosilicone		0.050	3/20 3/20 2/20 0/20 0/20	10 5.6 4.9 4.2 3.5	U	JT
FS-1281, Lot 39, Jar DC-2	Dow Corning Corporation	7887	Fluorosilicone		0.050	5/20 2/20 1/20 0/20 0/20	10 5.6 3.5 2.8 2.1	U	JT
FS-1281, Lot 39, Jars KSC-116 to KSC-119	Dow Corning Corporation	76936	Fluorosilicone	None accepted	0.050	1-4/20	10	U	JT
FS-1281, Lot 39, Jars KSC-49 to KSC-107	Dow Corning Corporation	7163 9275	Fluorosilicone	Thirty-two jars accepted	0.050	0-4/20	10	-	JT
FS-1281, Lot 40, Jars ME-56 to ME-58	Dow Corning Corporation	9136	Fluorosilicone	One jar accepted	0.050	0-3/20	10	-	JT
FS-1281, Lot 49, Jars KSC-25 to KSC-40	Dow Corning Corporation	8148	Fluorosilicone	Six jars accepted	0.050	0-4/20	10	-	JT
FS-1281, Lot 41, Jars ME-29 to ME-52	Dow Corning Corporation	8733	Fluorosilicone	Fifteen jars accepted	0.050	0-3/20	10	-	JT
FS-1281, Lot 41, Jars TEST-1 to TEST-12	Dow Corning Corporation	8786	Fluorosilicone	Nine jars accepted	0.050	0-3/20	10	-	JT
FS-1281, Lot 44, Jars CB-194 to CB-211	Dow Corning Corporation	10046	Fluorosilicone	Thirteen jars accepted	0.050	0-3/20	10	-	JT
FS-1281, Lot E-322-62-Q	Dow Corning Corporation	7656	Fluorosilicone		0.050	3/36	10	U	JT
FS-1281, Lot E-322-62-K-2	Dow Corning Corporation	7871	Fluorosilicone		0.050	2/40 2/20 2/20 0/20 0/20	10 7.7 7.0 6.3 5.6	U	JT

TABLE I. LUBRICANTS (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (in.)	No. Reactions/ No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
Halocarbon Oil, Series 14-25	Halocarbon Products Corporation	6042	Chlorofluorocarbon		0.5 ml	0/20	10	S	S
Halocarbon Oil, Series 14-25E	Halocarbon Products Corporation	6039	Chlorofluorocarbon		0.5 ml	0/20	10	S	S
Halocarbon Oil, Series 208	Halocarbon Products Corporation	5832	Chlorofluorocarbon		0.5 ml	0/20	10	S	S
Halocarbon Oil, Series 208	Halocarbon Products Corporation	7395	Chlorofluorocarbon		0.5 ml	0/20	10	S	S
Halocarbon Oil, Series 208	Halocarbon Products Corporation	7394	Chlorofluorocarbon		0.5 ml	0/20	10	S	S
75% Halocarbon 208 Oil - 25% Bestoil	Chemistry Branch	8505			0.050	6/20 3/20 4/20 3/20 2/20 0/20	10 7.7 5.6 3.5 1.4 0.7	U	U
80% Halocarbon 208 Oil - 20% Bestoil	Chemistry Branch	8591			0.050	4/20 3/20 2/20 0/20	10 7.7 5.6 4.2 3.5	U	U
83% Halocarbon 208 Oil - 17% Bestoil	Chemistry Branch	8650			0.050	15/140 13/140 1/140 0/140	10 9.1 8.4 7.7	U	U
80% Halocarbon 208 Oil - 20% DC 200 Oil	Chemistry Branch	8654			0.050	5/40	10	U	U
90% Halocarbon 208 Oil - 10% DC 200 Oil	Chemistry Branch	8983			0.050	11/160 9/160 0/160 0/160	10 9.1 8.4 7.7	U	U
Halocarbon Grease, Series 11B3	Halocarbon Products Corporation	7059	Chlorofluorocarbon		0.050	0/20	10	S	S
Halocarbon Grease, Series 25-10M	Halocarbon Products Corporation	6045	Chlorofluorocarbon		0.050	0/20	10	S	S
Halocarbon Grease, Series 25-20M	Halocarbon Products Corporation	6046	Chlorofluorocarbon		0.050	0/20	10	S	S
Halocarbon Grease X90-10	Halocarbon Products Corporation	6043	Chlorofluorocarbon		0.050	0/20	10	S	S
Halocarbon Grease X90-15M	Halocarbon Products Corporation	6044	Chlorofluorocarbon		0.050	0/20	10	S	S
Halocarbon Grease X90-15M-5A	Halocarbon Products Corporation	6519	Chlorofluorocarbon		0.050	0/20	10	S	S
Halocarbon Grease 25-5S	Halocarbon Products Corporation	10264	Chlorofluorocarbon	Three batches tested	0.050	0/60	10	S	S

TABLE I. LUBRICANTS (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/ No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
Halocarbon Oil 13-21	Halocarbon Corporation	989	Chlorofluorocarbon		0.050	0/20	10	S	S
Halocarbon Oil 11-21	Halocarbon Corporation	1287	Chlorofluorocarbon		0.050	0/20	10	S	S
Halocarbon Grease 25-20MB	Halocarbon Corporation	1262	Chlorofluorocarbon	Contains rust inhibitor	0.050	0/20	10	S	S
Halocarbon Grease 25-20MA	Halocarbon Corporation	1261	Chlorofluorocarbon	Contains rust inhibitor	0.050	0/20	10	S	S
Halocarbon Grease 25-20MZ	Halocarbon Corporation	1244	Chlorofluorocarbon	Contains rust inhibitor	0.050	0/20	10	S	S
Halocarbon Grease 25-10MZ	Halocarbon Corporation	1243	Chlorofluorocarbon	Contains rust inhibitor	0.050	0/20	10	S	S
Halocarbon Grease 25-20M-5A	Halocarbon Corporation	1831	Chlorofluorocarbon with a barium sulfonate inhibitor	Contains rust inhibitor	0.050	0/20	10	S	S
Houghton Hi-Temp Grease 2409	E. H. Houghton Company	4421	Polyglycol		0.050	3/20	10	U	U
Invelco-33	Drilube Company	1357			0.050	2/20	10	U	U
Johnson's No. 250 J-Cool		6653			0.5 ml	5/20	10	U	U
Kay Lube Dry Film Lube	Kaynar Manufacturing Company	7067	Molydisulfide with organic binder	Coated inserts		6/20	10	U	U
Kay Lube Dry Film Lube	Kaynar Manufacturing Company	7203 7207		Coated inserts Coated inserts	0.0024 0.0024	4/20 0/20	7.62 3.46	U U	U U
Kel-F Polymer Oil, Lot 509	Minnesota Mining and Manufacturing Company	6755	Chlorofluorocarbon		0.5 ml	0/20	10	S	S
Kel-F-90 Grease	Minnesota Mining and Manufacturing Company	5908	Chlorofluorocarbon		0.050	0/20	10	S	S
Kel-F-90 Grease, Lot 532	Minnesota Mining and Manufacturing Company	7002	Chlorofluorocarbon		0.050	0/20	10	S	S
Kel-F-90 Grease, Lot 534	Minnesota Mining and Manufacturing Company	7401	Chlorofluorocarbon		0.050	1/40	10	S	S
Kel-F-90 Grease, Lot 540	Minnesota Mining and Manufacturing Company	9130	Chlorofluorocarbon	Three jars evaluated	0.050	0/40	10	S	S
Kel-F-90 Grease, Lot 1224	Minnesota Mining and Manufacturing Company	5988	Chlorofluorocarbon		0.050	0/20	10	S	S

TABLE I. LUBRICANTS (Continued)

Material	Manufacturer or Source	Test No.	Composite	Remarks	Thickness (inch)	No. Reactions/No. Test	Energy Level Kg/m	Batch or Jar Rating	Material Rating
Kel-F-90 Grease, Lot 529 (with rust inhibitor)	Minnesota Mining and Manufacturing Company	6652	Chlorofluorocarbon		0.050	0/20	10	S	S
Kel-F-90 Grease	Minnesota Mining and Manufacturing Company	3243	Chlorofluorocarbon	Two batches tested	0.050	0/20	10	S	S
Kel-F-90 Grease, Lot 507	Minnesota Mining and Manufacturing Company	4419	Chlorofluorocarbon		0.050	0/20	10	S	S
Kel-F-90 Grease, Lot 1222	Minnesota Mining and Manufacturing Company	5030	Chlorofluorocarbon		0.050	0/20	10	S	S
Kel-F-Grease L1477 NB14781-9	Minnesota Mining and Manufacturing Company	5482	Chlorofluorocarbon		0.050	0/20	10	S	S
Kel-F-Polymer Oil Grade KF-10	Minnesota Mining and Manufacturing Company	4420	Chlorofluorocarbon		0.050	0/20	10	S	S
Kel-F-Polymer Oil Grade KF-10 (Lot 1273)	Minnesota Mining and Manufacturing Company	5480	Chlorofluorocarbon		0.050	0/20	10	S	S
Kel-F-Polymer Oil, Lot 502	Minnesota Mining and Manufacturing Company	5573	Chlorofluorocarbon		0.050	0/20	10	S	S
Kel-F Oil No. 1	Minnesota Mining and Manufacturing Company	451	Chlorofluorocarbon		0.050	0/20	10	S	S
Kel-F-10-200 Wax	Minnesota Mining and Manufacturing Company	356	Chlorofluorocarbon		0.050	0/20	10	S	S
Kel-F Polymer Oil No. 10	Minnesota Mining and Manufacturing Company	2744	Chlorofluorocarbon	Two batches tested	0.050	0/20	10	S	S
Kel-F-10, Oil Lot 516	Minnesota Mining and Manufacturing Company	7586	Chlorofluorocarbon		0.5 ml	0/20	10	S	S
Kel-F Polymer Oil KF-3	Minnesota Mining and Manufacturing Company	2721	Chlorofluorocarbon	Contains rust inhibitor	0.050	1/60	10	S	S
Kel-F Polymer Oil KF-1	Minnesota Mining and Manufacturing Company	2722	Chlorofluorocarbon	Contains rust inhibitor	0.050	0/20	10	S	S
Kel-F 10 Polymer Oil Lot 1006-1	Minnesota Mining and Manufacturing Company	2897	Chlorofluorocarbon		0.050	0/20	10	S	S
KX-262 NB-1 247-36	Minnesota Mining and Manufacturing Company	3604	Chlorofluorocarbon		0.050	0/40	10	S	S
KX-245 Lot 2	Minnesota Mining and Manufacturing Company	3606	Chlorofluorocarbon		0.050	0/40	10	S	HT
Kel-F Polymer Oil KF-10, Lot 523	Minnesota Mining and Manufacturing Company	8385	Chlorofluorocarbon		0.050	0/20	10	S	S

TABLE I. LUBRICANTS (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/ No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
KX-245 Polymer Oil	Minnesota Mining and Manufacturing Company	8599			0.050	0/20	10	S	BT
Krytox 142AA Oil, Lot 8	E.I. du Pont de Nemours and Company	9894	Fluorocarbon		0.050	0/20	10	S	S
Krytox 143AB Oil, Lot 16	E.I. du Pont de Nemours and Company	9900	Fluorocarbon		0.050	0/20	10	S	S
Krytox 143AC Oil, Lot 17	E.I. du Pont de Nemours and Company	9898	Fluorocarbon		0.050	0/20	10	S	S
Krytox 143AD Oil, Lot 6	E.I. du Pont de Nemours and Company	9902	Fluorocarbon		0.050	0/20	10	S	S
Krytox 143AZ Oil, Lot 3	E.I. du Pont de Nemours and Company	9901	Fluorocarbon		0.050	0/20	10	S	S
Krytox 240AB Grease, Lot 4	E.I. du Pont de Nemours and Company	9896	Fluorocarbon		0.050	0/20	10	S	S
Krytox 240AC Grease, Lot 17	E.I. du Pont de Nemours and Company	9897	Fluorocarbon		0.050	0/20	10	S	S
PR-143AB Oil, Lot 6	E.I. du Pont de Nemours and Company	8715	Fluorocarbon	Krytox 143AB	0.050	0/20	10	S	S
PR-143AC Oil, Lot 6	E.I. du Pont de Nemours and Company	8714	Fluorocarbon	Krytox 143AC	0.050	0/20	10	S	S
PR-240AB Grease, Lot 4	E.I. du Pont de Nemours and Company	8716	Fluorocarbon	Krytox 240AB	0.050	0/20	10	S	S
PR-240AC Grease, Lot 4	E.I. du Pont de Nemours and Company	8717	Fluorocarbon	Krytox 240AC	0.050	0/20	10	S	S
PR-240AC Grease, Lot 7	E.I. du Pont de Nemours and Company	8841	Fluorocarbon	Krytox 240AC	0.050	0/20	10	S	S
PR-240AC Grease, Lot 9	E.I. du Pont de Nemours and Company	9148	Fluorocarbon	Krytox 240AC	0.050	0/20	10	S	S
PR-143 Oil	E.I. du Pont de Nemours and Company	7631	Fluorocarbon		0.5 ml	0/20	10	S	S
PR-143 Oil	E.I. du Pont de Nemours and Company	7632	Fluorocarbon	Stainless steel insert	Stainless	0/20	10	S	S
PR-240 Grease	E.I. du Pont de Nemours and Company	7633	Fluorocarbon		0.050	0/20	10	S	S

TABLE 1. LUBRICANTS (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (in.)	No. Reactions/No. Tests	Energy Level Kg/in	Batch or Jar Rating	Material Rating
Lapping Compound 38-1200	United States Products Company	1969			0.050	2/4 2/16	10 5	U	U
Liquid O-Ring 1231, Lot 545	Oil Research Center	8619	Tellon-chlorofluorocarbon		0.050	0/70	10	S	BT
Liquid O-Ring, Lot 525	Oil Research Center	7956	Tellon-chlorofluorocarbon	Three tubes evaluated	0.050	0/60	10	S	BT
Lubeco 905 Dry Film Lubricant	Hi-Shear Corporation	6986			0.063	0/20	10	S	BT
Lubeco 905 Dry Film Lubricant	Hi-Shear Corporation	6981			0.063	0/20	10	S	BT
Lubeco 905 Dry Film Lubricant	Parker Aircraft	8236			0.050	0/20	10	S	BT
Lube Rex	General Control Company	597	Hydrocarbon grease		0.050	2/6	10	U	U
Lubriko MD-T-410	Auskco Lubricant Company	595	Hydrocarbon grease		0.050	3/12	10	U	U
Lubriplate	Fiske Products Incorporated	645	Hydrocarbon grease		0.050	2/10	10	U	U
Lubrisol	A.H. Thomas Company	657	Hydrocarbon grease		0.050	2/6 0/20	10 5	U	U
McLube 99	McLube Chemical Company	38-9			0.050	0/40	10	S	S
McLube 2610	McLube Chemical Company	3896	Molybdenum, which is hydrocarbon grease		0.050	0/20	10	S	BT
McLube 2022	McLube Chemical Company	3897	Molybdenum, with graphite and fluorine		0.050	0/20	10	S	BT
McLube Lubolube	McLube Engineering Company	3842	Hydrocarbon grease	Very violent reaction	0.050	1/20	5	U	U
Milwau Research Institute Dry Film Lubricant	Chemical Research Institute	6015	With 1.5 parts graphite and molybdenum in sodium stearate 10:1:1:1			0/20	10	S	S
Milwau Research Institute Dry Film Lubricant	Milwau Research Institute	6014	Same as 6015, but no molybdenum			0/20	10	S	S
Milwau Research Institute Dry Film Lubricant	Milwau Research Institute	6013	Same as 6015, but no graphite			0/20	10	S	S
Milwau Research Institute Dry Film Lubricant	Milwau Research Institute	6012	Same as 6015, but no graphite and no molybdenum			0/20	10	S	S
Milwau Research Institute Dry Film Lubricant	Milwau Research Institute	6011	Same as 6015, but no graphite and no molybdenum			0/20	10	S	S
Milwau Research Institute Dry Film Lubricant	Milwau Research Institute	6010	Same as 6015, but no graphite and no molybdenum			0/20	10	S	S
Milwau Research Institute Dry Film Lubricant	Milwau Research Institute	6009	Same as 6015, but no graphite and no molybdenum			0/20	10	S	S
Milwau Research Institute Dry Film Lubricant	Milwau Research Institute	6008	Same as 6015, but no graphite and no molybdenum			0/20	10	S	S
Milwau Research Institute Dry Film Lubricant	Milwau Research Institute	6007	Same as 6015, but no graphite and no molybdenum			0/20	10	S	S
Milwau Research Institute Dry Film Lubricant	Milwau Research Institute	6006	Same as 6015, but no graphite and no molybdenum			0/20	10	S	S
Milwau Research Institute Dry Film Lubricant	Milwau Research Institute	6005	Same as 6015, but no graphite and no molybdenum			0/20	10	S	S
Milwau Research Institute Dry Film Lubricant	Milwau Research Institute	6004	Same as 6015, but no graphite and no molybdenum			0/20	10	S	S
Milwau Research Institute Dry Film Lubricant	Milwau Research Institute	6003	Same as 6015, but no graphite and no molybdenum			0/20	10	S	S
Milwau Research Institute Dry Film Lubricant	Milwau Research Institute	6002	Same as 6015, but no graphite and no molybdenum			0/20	10	S	S
Milwau Research Institute Dry Film Lubricant	Milwau Research Institute	6001	Same as 6015, but no graphite and no molybdenum			0/20	10	S	S
Milwau Research Institute Dry Film Lubricant	Milwau Research Institute	5999	Same as 6015, but no graphite and no molybdenum			0/20	10	S	S
Milwau Research Institute Dry Film Lubricant	Milwau Research Institute	5998	Same as 6015, but no graphite and no molybdenum			0/20	10	S	S
Milwau Research Institute Dry Film Lubricant	Milwau Research Institute	5997	Same as 6015, but no graphite and no molybdenum			0/20	10	S	S
Milwau Research Institute Dry Film Lubricant	Milwau Research Institute	5996	Same as 6015, but no graphite and no molybdenum			0/20	10	S	S
Milwau Research Institute Dry Film Lubricant	Milwau Research Institute	5995	Same as 6015, but no graphite and no molybdenum			0/20	10	S	S
Milwau Research Institute Dry Film Lubricant	Milwau Research Institute	5994	Same as 6015, but no graphite and no molybdenum			0/20	10	S	S
Milwau Research Institute Dry Film Lubricant	Milwau Research Institute	5993	Same as 6015, but no graphite and no molybdenum			0/20	10	S	S
Milwau Research Institute Dry Film Lubricant	Milwau Research Institute	5992	Same as 6015, but no graphite and no molybdenum			0/20	10	S	S
Milwau Research Institute Dry Film Lubricant	Milwau Research Institute	5991	Same as 6015, but no graphite and no molybdenum			0/20	10	S	S
Milwau Research Institute Dry Film Lubricant	Milwau Research Institute	5990	Same as 6015, but no graphite and no molybdenum			0/20	10	S	S
Milwau Research Institute Dry Film Lubricant	Milwau Research Institute	5989	Same as 6015, but no graphite and no molybdenum			0/20	10	S	S
Milwau Research Institute Dry Film Lubricant	Milwau Research Institute	5988	Same as 6015, but no graphite and no molybdenum			0/20	10	S	S
Milwau Research Institute Dry Film Lubricant	Milwau Research Institute	5987	Same as 6015, but no graphite and no molybdenum			0/20	10	S	S
Milwau Research Institute Dry Film Lubricant	Milwau Research Institute	5986	Same as 6015, but no graphite and no molybdenum			0/20	10	S	S
Milwau Research Institute Dry Film Lubricant	Milwau Research Institute	5985	Same as 6015, but no graphite and no molybdenum			0/20	10	S	S
Milwau Research Institute Dry Film Lubricant	Milwau Research Institute	5984	Same as 6015, but no graphite and no molybdenum			0/20	10	S	S
Milwau Research Institute Dry Film Lubricant	Milwau Research Institute	5983	Same as 6015, but no graphite and no molybdenum			0/20	10	S	S
Milwau Research Institute Dry Film Lubricant	Milwau Research Institute	5982	Same as 6015, but no graphite and no molybdenum			0/20	10	S	S
Milwau Research Institute Dry Film Lubricant	Milwau Research Institute	5981	Same as 6015, but no graphite and no molybdenum			0/20	10	S	S
Milwau Research Institute Dry Film Lubricant	Milwau Research Institute	5980	Same as 6015, but no graphite and no molybdenum			0/20	10	S	S
Milwau Research Institute Dry Film Lubricant	Milwau Research Institute	5979	Same as 6015, but no graphite and no molybdenum			0/20	10	S	S
Milwau Research Institute Dry Film Lubricant	Milwau Research Institute	5978	Same as 6015, but no graphite and no molybdenum			0/20	10	S	S
Milwau Research Institute Dry Film Lubricant	Milwau Research Institute	5977	Same as 6015, but no graphite and no molybdenum			0/20	10	S	S
Milwau Research Institute Dry Film Lubricant	Milwau Research Institute	5976	Same as 6015, but no graphite and no molybdenum			0/20	10	S	S
Milwau Research Institute Dry Film Lubricant	Milwau Research Institute	5975	Same as 6015, but no graphite and no molybdenum			0/20	10	S	S
Milwau Research Institute Dry Film Lubricant	Milwau Research Institute	5974	Same as 6015, but no graphite and no molybdenum			0/20	10	S	S
Milwau Research Institute Dry Film Lubricant	Milwau Research Institute	5973	Same as 6015, but no graphite and no molybdenum			0/20	10	S	S
Milwau Research Institute Dry Film Lubricant	Milwau Research Institute	5972	Same as 6015, but no graphite and no molybdenum			0/20	10	S	S
Milwau Research Institute Dry Film Lubricant	Milwau Research Institute	5971	Same as 6015, but no graphite and no molybdenum			0/20	10	S	S
Milwau Research Institute Dry Film Lubricant	Milwau Research Institute	5970	Same as 6015, but no graphite and no molybdenum			0/20	10	S	S
Milwau Research Institute Dry Film Lubricant	Milwau Research Institute	5969	Same as 6015, but no graphite and no molybdenum			0/20	10	S	S
Milwau Research Institute Dry Film Lubricant	Milwau Research Institute	5968	Same as 6015, but no graphite and no molybdenum			0/20	10	S	S
Milwau Research Institute Dry Film Lubricant	Milwau Research Institute	5967	Same as 6015, but no graphite and no molybdenum			0/20	10	S	S
Milwau Research Institute Dry Film Lubricant	Milwau Research Institute	5966	Same as 6015, but no graphite and no molybdenum			0/20	10	S	S
Milwau Research Institute Dry Film Lubricant	Milwau Research Institute	5965	Same as 6015, but no graphite and no molybdenum			0/20	10	S	S
Milwau Research Institute Dry Film Lubricant	Milwau Research Institute	5964	Same as 6015, but no graphite and no molybdenum			0/20	10	S	S
Milwau Research Institute Dry Film Lubricant	Milwau Research Institute	5963	Same as 6015, but no graphite and no molybdenum			0/20	10	S	S
Milwau Research Institute Dry Film Lubricant	Milwau Research Institute	5962	Same as 6015, but no graphite and no molybdenum			0/20	10	S	S
Milwau Research Institute Dry Film Lubricant	Milwau Research Institute	5961	Same as 6015, but no graphite and no molybdenum			0/20	10	S	S
Milwau Research Institute Dry Film Lubricant	Milwau Research Institute	5960	Same as 6015, but no graphite and no molybdenum			0/20	10	S	S
Milwau Research Institute Dry Film Lubricant	Milwau Research Institute	5959	Same as 6015, but no graphite and no molybdenum			0/20	10	S	S
Milwau Research Institute Dry Film Lubricant	Milwau Research Institute	5958	Same as 6015, but no graphite and no molybdenum			0/20	10	S	S
Milwau Research Institute Dry Film Lubricant	Milwau Research Institute	5957	Same as 6015, but no graphite and no molybdenum			0/20	10	S	S
Milwau Research Institute Dry Film Lubricant	Milwau Research Institute	5956	Same as 6015, but no graphite and no molybdenum			0/20	10	S	S
Milwau Research Institute Dry Film Lubricant	Milwau Research Institute	5955	Same as 6015, but no graphite and no molybdenum			0/20	10	S	S
Milwau Research Institute Dry Film Lubricant	Milwau Research Institute	5954	Same as 6015, but no graphite and no molybdenum			0/20	10	S	S
Milwau Research Institute Dry Film Lubricant	Milwau Research Institute	5953	Same as 6015, but no graphite and no molybdenum			0/20	10	S	S
Milwau Research Institute Dry Film Lubricant	Milwau Research Institute	5952	Same as 6015, but no graphite and no molybdenum			0/20	10	S	S
Milwau Research Institute Dry Film Lubricant	Milwau Research Institute	5951	Same as 6015, but no graphite and no molybdenum			0/20	10	S	S
Milwau Research Institute Dry Film Lubricant	Milwau Research Institute	5950	Same as 6015, but no graphite and no molybdenum			0/20	10	S	S
Milwau Research Institute Dry Film Lubricant	Milwau Research Institute	5949	Same as 6015, but no graphite and no molybdenum			0/20	10	S	S
Milwau Research Institute Dry Film Lubricant	Milwau Research Institute	5948	Same as 6015, but no graphite and no molybdenum			0/20	10	S	S
Milwau Research Institute Dry Film Lubricant	Milwau Research Institute	5947	Same as 6015, but no graphite and no molybdenum			0/20	10	S	S
Milwau Research Institute Dry Film Lubricant	Milwau Research Institute	5946	Same as 6015, but no graphite and no molybdenum			0/20	10	S	S
Milwau Research Institute Dry Film Lubricant	Milwau Research Institute	5945	Same as 6015, but no graphite and no molybdenum			0/20	10	S	S
Milwau Research Institute Dry Film Lubricant	Milwau Research Institute	5944	Same as 6015, but no graphite and no molybdenum			0/20	10	S	S
Milwau Research Institute Dry Film Lubricant	Milwau Research Institute	5943	Same as 6015, but no graphite and no molybdenum			0/20	10	S	S
Milwau Research Institute Dry Film Lubricant	Milwau Research Institute	5942	Same as 6015, but no graphite and no molybdenum			0/20	10	S	S
Milwau Research Institute Dry Film Lubricant	Milwau Research Institute	5941	Same as 6015, but no graphite and no molybdenum			0/20	10	S	S
Milwau Research Institute Dry Film Lubricant	Milwau Research Institute	5940	Same as 6015, but no graphite and no molybdenum			0/20	10	S	S
Milwau Research Institute Dry Film Lubricant	Milwau Research Institute	5939	Same as 6015, but no graphite and no molybdenum			0/20	10	S	S
Milwau Research Institute Dry Film Lubricant	Milwau Research Institute	5938	Same as 6015, but no graphite and no molybdenum			0/20	10	S	S
Milwau Research Institute Dry Film Lubricant	Milwau Research Institute	5937	Same as 6015, but no graphite and no molybdenum			0/20	10	S	S
Milwau Research Institute Dry Film Lubricant	Milwau Research Institute	5936	Same as 6015, but no graphite and no molybdenum			0/20	10	S	S
Milwau Research Institute Dry Film Lubricant	Milwau Research Institute	5935	Same as 6015, but no graphite and no molybdenum			0/20	10	S	S
Milwau Research Institute Dry Film Lubricant	Milwau Research Institute	5934	Same as 6015, but no graphite and no molybdenum			0/20	10	S	S
Milwau Research Institute Dry Film Lubricant	Milwau Research Institute	5933	Same as 6015, but no graphite and no molybdenum			0/20	10	S	S
Milwau Research Institute Dry Film Lubricant	Milwau Research Institute	5932	Same as 6015, but no graphite and no molybdenum			0/20	10	S	S
Milwau Research Institute Dry Film Lubricant	Milwau Research Institute	5931	Same as 6015, but no graphite and no molybdenum			0/20	10	S	S
Milwau Research Institute Dry Film Lubricant	Milwau Research Institute	5930	Same as 6015, but no graphite and no molybdenum			0/20	10	S	S
Milwau Research Institute Dry Film Lubricant	Milwau Research Institute	5929	Same as 6015, but no graphite and no molybdenum			0/20	10	S	S
Milwau Research Institute Dry Film Lubricant	Milwau Research Institute	5928	Same as 6015, but no graphite and no molybdenum			0/20	10	S	S
Milwau Research Institute Dry Film Lubricant	Milwau Research Institute	5927	Same as 6015, but no graphite and no molybdenum			0/20	10	S	S
Milwau Research Institute Dry Film Lubricant	Milwau Research Institute	5926	Same as 6015, but no graphite and no molybdenum			0/20	10	S	S
Milwau Research Institute Dry Film Lubricant	Milwau Research Institute	5925	Same as 6015, but no graphite and no molybdenum			0/20	10	S	S
Milwau Research Institute Dry Film Lubricant	Milwau Research Institute	5924	Same as 6015, but no graphite and no molybdenum			0/20	10	S	S
Milwau Research Institute Dry Film Lubricant	Milwau Research Institute	5923	Same as 6015, but no graphite and no molybdenum			0/20	10	S	S
Milwau Research Institute Dry Film Lubricant	Milwau Research Institute	5922	Same as 6015, but no graphite and no molybdenum			0/20	10	S	S
Milwau Research Institute Dry Film Lubricant	Milwau Research Institute	5921	Same as 6015, but no graphite and no molybdenum			0/20	10	S	S
Milwau Research Institute Dry Film Lubricant	Milwau Research Institute	5920	Same as 6015, but no graphite and no molybdenum			0/20	10	S	S
Milwau Research Institute Dry Film Lubricant	Milwau Research Institute	5919	Same as 6015, but no graphite and no molybdenum			0/20	10	S	S
Milwau Research Institute Dry Film Lubricant	Milwau Research Institute	5918	Same as 6015, but no graphite and no molybdenum			0/20	10	S	S
Milwau Research Institute Dry Film Lubricant	Milwau Research Institute	5917	Same as 6015, but no graphite and no molybdenum			0/20	10	S	S
Milwau Research Institute Dry Film Lubricant	Milwau Research Institute	5916	Same as 6015, but no graphite and no molybdenum			0/20	10	S	S
Milwau Research Institute Dry Film Lubricant	Milwau Research Institute	5915	Same as 6015, but no graphite and no molybdenum			0/20	10	S	S
Milwau Research Institute Dry Film Lubricant	Milwau Research Institute	5914	Same as 6015, but no graphite and no molybdenum			0/20	10	S	S
Milwau Research Institute Dry Film Lubricant	Milwau Research Institute	5913	Same as 6015, but no graphite and no molybdenum			0/20	10	S	S
Milwau Research Institute Dry Film Lubricant	Milwau Research Institute	5912	Same as 6015, but no graphite and no molybdenum			0/20	10	S	S
Milwau Research Institute Dry Film Lubricant	Milwau Research Institute	5911	Same as 6015, but no graphite and no molybdenum			0/20	10	S	S
Milwau Research Institute Dry Film Lubricant	Milwau Research Institute	5910	Same as 6015, but no graphite and no molybdenum			0/20	10	S	S
Milwau Research Institute Dry Film Lubricant	Milwau Research Institute	5909	Same as 6015, but no graphite and no molybdenum			0/20	10	S	S
Milwau Research Institute Dry Film Lubricant	Milwau Research Institute	5908	Same as 6015, but no graphite and no molybdenum			0/20	10	S	S
Milwau Research Institute Dry Film Lubricant	Milwau Research Institute	5907	Same as 6015, but no graphite and no molybdenum			0/20	10	S	S
Milwau Research Institute Dry Film Lubricant	Milwau Research Institute	5906	Same as 6015, but no graphite and no molybdenum			0/20	10	S	S
Milwau Research Institute Dry Film Lubricant	Milwau Research Institute	5905	Same as 6015, but no graphite and no molybdenum			0/20	10	S	S
Milwau Research Institute Dry Film Lubricant	Milwau Research Institute	5904	Same as 6015, but no graphite and no molybdenum			0/20	10	S	S
Milwau Research Institute Dry Film Lubricant	Milwau Research Institute	5903	Same as 6015, but no graphite and no molybdenum			0/20	10	S	S
Milwau Research Institute Dry Film Lubricant	Milwau Research Institute	5902	Same as 6015, but no graphite and no molybdenum			0/20	10	S	S
Milwau Research Institute Dry Film Lubricant	Milwau Research Institute	5901	Same as 6015, but no graphite and no molybdenum			0/20	10	S	S
Milwau Research Institute Dry Film Lubricant	Milwau Research Institute	5900	Same as 6015, but no graphite and no molybdenum			0/20	10	S	S
Milwau Research Institute Dry Film Lubricant	Milwau Research Institute	5899	Same as 6015, but no graphite and no molybdenum			0/20	10	S	S
Milwau Research Institute Dry Film Lubricant	Milwau Research Institute	5898	Same as 6015, but no graphite and no molybdenum			0			

TABLE 1. LUBRICANTS (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/ No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
Micro Seal Process 100-1	Microseal Products Co.	6638		On stainless steel inserts		0/20	10	S	S
Microseal Dry Film Lubricant 100-1	Microseal Products Sales	4660		Stainless steel inserts used		0/40	10	S	S
MLF-9 Dry Film Lubricant	Midwest Research Institute	6928	Molydisulfide, graphite, bismuth, aluminum phosphate	On stainless steel inserts		0/20	10	S	S
MLF Dry Film Lubricant	Midwest Research Institute	8694	Polymide bonded		0.002	10/20	10	U	U
MLF Dry Film Lubricant	Midwest Research Institute	8695	Polymide bonded		0.002	5/20	10	U	U
MLF-2 Dry Film Lubricant	Midwest Research Institute	8859	Polymide bonded dry film lubricant containing antimony oxide and molydisulfide		0.002	0/20	10	S	I
Mogul Taper Valvelube	Metallizing Engineering Co.	561			0.050	2/20	10	U	U
Mold Release Lubricant S-122	Miller-Stephenson Company	2736				0/20	10	S	S
Molytube Spray Dry Powder Lubricant Can No. 1	Bel-Ray Company Incorporated	5431	Molydisulfide in spray bomb	Sprayed on inserts		0/20	10	S	S
Molytube Spray Dry Powder Lubricant Can No. 2	Bel-Ray Company Incorporated	5430	Molydisulfide in spray bomb	Sprayed on inserts		0/20	10	S	S
Molytube Spray Dry Powder Lubricant	Bel-Ray Company Incorporated	4418	Molydisulfide in spray bomb	Sprayed on inserts		0/20	10	S	S
Molytube Spray Dry Powder Lubricant	Bel-Ray Company Incorporated	4791	Molydisulfide in spray bomb	Sprayed on stainless steel inserts		0/20	10	S	S
Molytube Spray (Sample No. 1)	Bel-Ray Company Incorporated	4797	Molydisulfide in spray bomb	Sprayed on stainless steel inserts		0/20	10	S	S
Molytube Spray (Sample No. 2)	Bel-Ray Company Incorporated	4776	Molydisulfide in spray bomb	Sprayed on stainless steel inserts		0/20	10	S	S
Molytube Spray (Sample No. 3)	Bel-Ray Company Incorporated	4775	Molydisulfide in spray bomb	Sprayed on stainless steel inserts		0/20	10	S	S
Molytube Spray (Sample No. 4)	Bel-Ray Company Incorporated	4774	Molydisulfide in spray bomb	Sprayed on stainless steel inserts		0/20	10	S	S
Molytube Spray (Sample No. 5)	Bel-Ray Company Incorporated	4773	Molydisulfide in spray bomb	Sprayed on stainless steel inserts		0/20	10	S	S

TABLE I. LUBRICANTS (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/ No. Tests	Energy Level, Kg/in	Batch or Jar Rating	Material Rating
Molykote N	Bel-Ray Company, Incorporated	9293	Graphite-molydisulfide in an inorganic binder	Cured at 175°C for 30 minutes	0.004	0/20	10	S	BT
Molykote Spray Versatile Dry Powder Lubricant	Bel-Ray Company, Incorporated	6136		Sprayed on stainless steel inserts		0/220	10	S	S
Molykote 1612	Bel-Ray Company, Incorporated	5849			0.5 ml	3/60	10	U	U
Molykote	Bel-Ray Company, Incorporated	2735	Molydisulfide in non propellant			0/20	10	S	BT
Molykote AR	Bel-Ray Company, Incorporated	2734	Molydisulfide and binder			8/80	10	U	U
Molub Alloy 379, Dry Film Lubricant	Imperial Oil and Grease Company	8807			0.050	9/20	10	U	U
Molub Alloy 369, Dry Film Lubricant	Imperial Oil and Grease Company	8808			0.050	17/20	10	U	U
Molykote G Grease	Alpha Molykote Corporation	7110	Molydisulfide and petroleum base oil	Violent reactions	0.050	3/4	10	U	U
Molykote Grease M-55	Alpha Molykote Corporation	5118	Molydisulfide and organic vehicle		0.050	2/20	10	U	U
Molykote Spray Lube	Alpha Molykote Corporation	7773	Molydisulfide with Freon propellant			0/20	10	S	BT
Molykote M-88(R)	Alpha Molykote Corporation	3463				5/20 2/20 0/20	10 5 3	U U U	U U U
Molykote X-15	Alpha Molykote Corporation	3362	Sodium silicate, molydisulfide, and graphite			0/60	10	S	BT
Molykote Z	Alpha Molykote Corporation	1655	Molydisulfide powder	Two batches tested		0/20	10	S	S
Molykote Z	Alpha Molykote Corporation	1654		Without stainless steel inserts		2/20	10	—	—
Molykote Z, MIL-M-7860A	Alpha Molykote Corporation	6449	Molydisulfide	On stainless steel inserts		0/20	10	S	S
Moly Spray Kote Lubricant No. 1	Alpha Molykote Corporation	4780	Molydisulfide in spray bomb	Sprayed on stainless steel inserts		2/60	10	U	U
Moly Spray Kote Lubricant No. 2	Alpha Molykote Corporation	4772	Molydisulfide in spray bomb	Sprayed on stainless steel inserts		0/20	10	S	BT



TABLE I. LUBRICANTS (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
Moly Spray Kote Lubricant No. 3	Alpha Molykote Corporation	4771	Molydisulfide in spray bomb	Sprayed on stainless steel inserts		0/20	10	S	BT
Moly Spray Kote Lubricant No. 4	Alpha Molykote Corporation	4770	Molydisulfide in spray bomb	Sprayed on stainless steel inserts		0/20	10	S	BT
Moly Spray Kote Lubricant No. 5	Alpha Molykote Corporation	4769	Molydisulfide in spray bomb	Sprayed on stainless steel inserts		0/20	10	S	BT
Moly Spray Kote Lubricant No. 6	Alpha Molykote Corporation	4882	Molydisulfide in spray bomb	Sprayed on stainless steel inserts		4/20	10	U	U
Moly Spray Kote Lubricant No. 7	Alpha Molykote Corporation	4883	Molydisulfide in spray bomb	Sprayed on stainless steel inserts		3/20	10	U	U
Moly Spray Kote Lubricant No. 8	Alpha Molykote Corporation	4884	Molydisulfide in spray bomb	Sprayed on stainless steel inserts		2/20	10	U	U
Moly Spray Kote Lubricant No. 9	Alpha Molykote Corporation	4885	Molydisulfide in spray bomb	Sprayed on stainless steel inserts		0/20	10	S	BT
Molydynamel E	Lockrey Company	3239	Molydisulfide, teflon, and toluene			7/60 2/20	10 5	U U	U U
Oil-ES-Oil	American Duralum Company	4626	Teflon spray bomb			0/20	10	S	BT
Orlox 200 P	Bel-Ray Company, Incorporated	5304			0.050	0/20	10	S	BT
Orlox 200 P	Bel-Ray Company, Incorporated	5839	Aroclor, graphite, and molydisulfide	Sprayed on stainless steel inserts	0.050	0/20	10	S	BT
Orlox 500 C	Bel-Ray Company, Incorporated	5300			0.050	0/20	10	S	BT
Orlox 500 C	Bel-Ray Company, Incorporated	5843	Fluorolube, graphite, and molydisulfide		0.5 ml	0/20	10	S	BT
Orlox 1800 P	Bel-Ray Company, Incorporated	5837	Aroclor, graphite, and molydisulfide		0.050	3/60	10	U	BT
Orlox 1800 P	Bel-Ray Company, Incorporated	5302			0.050	0/20	10	S	BT
Oxylube	Drilube Company		(See Drilube)						
Parker "Q" Lube	Parker Appliance Company	788			0.050	2/5	10	U	U
Parker Water Oil Lube Grease 50	Parker Appliance Company	274			0.050	1/2 1/4	10 3	U	U
P.D. 785	Frankford Arsenal	2679	Mixture of perfluorinated fatty amines		0.050	0/20	10	S	BT

TABLE I. LUBRICANTS (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/No. Tests	Energy Level, kg/m	Batch or Jar Rating	Material Rating
P.D. 786	Frankford Arsenal	2080	Grease consisting of polytetrafluoroethylene gelling agent (P.D. 787) and perfluorotrialkylamine oil (P.D. 785)		0.050	0/20	10	S	BT
P.D. 787	Frankford Arsenal	2105	Polytetrafluoroethylene gelling agent			0/20	10	S	BT
P.D. 788	Frankford Arsenal	3081	Grease consisting of P.D. 787 and P.D. 789		0.050	0/20	10	S	BT
P.D. 789	Frankford Arsenal	2077	Mixture of perfluorotrialkylamines		0.050	0/20	10	S	BT
P.D. 797	Frankford Arsenal	3553	Perfluorotrialkylamine base oil and silica gelling agent		0.050	0/20	10	S	BT
P.D. 791	Frankford Arsenal	2106	Purified sample of perfluorotrialkylamine		0.050	0/10	10	I	I
P.D. 792	Frankford Arsenal	2078	Grease consisting of graphite gelling agent and perfluorotrialkylamine base oil (P.D. 789)		0.050	0/20	10	S	BT
P.D. 800	Frankford Arsenal	3561	Perfluorotrialkylamine base oil and silica gelling agent		0.050	0/20	10	S	BT
P.D. 801	Frankford Arsenal	3552	Perfluorotrialkylamine base oil and silica gelling agent		0.050	0/20	10	S	BT
P.D. 808	Frankford Arsenal	3560	Silica gelling agent			0/20	10	S	BT
P.D. 809	Frankford Arsenal	3563	Silica gelling agent			0/20	10	S	BT
P.D. 810	Frankford Arsenal	3564	Silica gelling agent			0/20	10	S	BT
P.D. 811	Frankford Arsenal	3570	Special grade graphite			0/20	10	S	BT
P.D. 812	Frankford Arsenal	3569	Perfluorotrialkylamine blend			0/20	10	S	BT
P.D. 816	Frankford Arsenal	3991	Fluorinated amine oil and fluorinated polymer gelling agent		0.050	0/20	10	S	BT

TABLE I. LUBRICANTS (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/No. Tests	Energy Level Kg/in	Batch or Jar Rating	Material Rating
P.D. 817	Frankford Arsenal	3992	Fluorinated oils and polymer gelling agent		0.050	0/20	10	S	BT
P.D. 819	Frankford Arsenal	3993	Fluorinated oil and polymer gelling agent		0.050	0/20	10	S	BT
P.D. 820	Frankford Arsenal	3994	Fluorinated polymer		0.050	0/20	10	S	BT
P.D. 821	Frankford Arsenal	3995 7628	Fluorinated Polymer		0.050 0.5 ml	0/20 0/20	10 10	S S	BT BT
P.D. 822	Frankford Arsenal	3996	Fluorinated polymer		0.050	4/20	10	U	BT
PD-838	Frankford Arsenal	5893			0.050	0/20	10	S	BT
PD-838A	Frankford Arsenal	7629			0.050	0/20	10	S	BT
PD-838A	Frankford Arsenal	7630		Stainless steel inserts	Smear	0/20	10	S	BT
PD-839 Oil	Frankford Arsenal	5971			0.5 ml	0/20	10	S	BT
PD-855 Oil	Frankford Arsenal	7641			0.5 ml	2/40	10	U	U
PD-856 Grease	Frankford Arsenal	7637			0.050	0/20	10	S	BT
PD-857 Grease	Frankford Arsenal	7639			0.050	0/20	10	S	BT
P.D. 826A	Frankford Arsenal	7638			0.050	0/20	10	S	BT
Pydraul AC (Lot F4)	Monsanto Chemical Company	4417			0.050	3/5 2/15	10 5	U	U
Polyglycol 11-200 Lot 8-6	Dow Chemical Company	1940	Polyglycol		0.050	0/20	10	I	I
QC-2-0093	Dow Corning Corporation		Fluorosilicone	Sensitivity varies from jar to jar	0.050	0-5/20	10	JT	JT
QC-2-0026	Dow Corning Corporation		Fluorosilicone	Sensitivity varies from jar to jar	0.050	0-1/20	10	JT	JT
QC-2-0026, Lot 37	Dow Corning Corporation	7454	Fluorosilicone	Twenty-four jars tested 18 rejected	0.050	0-4/20	10	JT	JT
QC-2-0093, 1280, Jar No. 1	Dow Corning Corporation	7392	Fluorosilicone		0.050	0/20	10	S	JT
Jar No. 2	Dow Corning Corporation	7393	Fluorosilicone		0.050	0/20	10	S	JT
QJ-1-0065 Fluid (2500 cs)	Dow Corning Corporation	1288	Fluorosilicone		0.050	3/12 0/8	10 5	U	U

TABLE I. LUBRICANTS (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
QF-1-0065 (7500 cs)	Dow Corning Corporation	4438	Fluorosilicone		0.050	0/20	10	S	U
Rulon Spray	Dixon Corporation	9152			0.001	1/60	10	S	BT
R & R Teflon Lubricant No. 30 Colloidal Dispenser Stock No. 499	Ideal Design Company	5051			0.050	0/20	10	S	BT
Sealube Grease	Parker Appliance Company	550			0.050	2/2 1/4 3/10	10 5 3	U U U	U U U
Semco No. 551		1442			0.050	0/20	10	S	U
Shell SAE-30 Oil	Shell Oil Company	9764	Hydrocarbon	Violent	0.050	10/20 8/20 5/20 3/20 1/20 0/20	10 7.7 5.6 3.5 1.4 0.7	U	U
Silgon 6 (1000 cs)	Anderson Chemical Company	4415			0.050	7/20	10	U	U
Silgon Fluid 6 (300 cs)	Anderson Chemical Company	965			0.050	2/5 2/3	10 5	U -	U -
Silgon 6 (500 cs)	Anderson Chemical Company	4413			0.050	2/20	10	U	U
Silgon Grease 10	Anderson Chemical Company	4410			0.050	2/20	10	U	U
Silicone Lubricant 398-38-1114	General Electric Company	955			0.050	2/3 1/1 1/5	10 5 1	U -	U -
Silicone Lubricant 20057	Electromechanics Corporation	478			0.050	2/10	10	U	U
Silicone Lubricant 81717	General Electric Company	569			0.050	2/3 1/1	10 5	U -	U -
Silicone Fluid SF 96 (275 cs)	General Electric Company	564			0.050	2/10 0/10	10 5	U	U
Silicone Fluid SF 96 (1100 cs)	General Electric Company	565			0.050	2/5 4/6	10 5	U	U
Silicone Fluid SF 96 (40 cs)	General Electric Company	566			0.050	2/6 2/6	10 5	U	U
Silicone Fluid SF 81 (40 cs)	General Electric Company	493			0.050	2/4 2/3	10 5	U	U

TABLE I. LUBRICANTS (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/ No. Tests	Energy Level kg/in	Batch or Jar Rating	Material Rating
Slick Spray Lubricant	Oil Center Research	9149			0.001	0/60	10	S	BT
S-122 Fluorocarbon Lubricant	Miller Stephenson Company	9757				0/20	10	S	BT
Syntex 48	Bel-Ray Company Incorporated	5476			0.050	4/20 1/3	10 9	U	U
Syntex 54	Bel-Ray Company Incorporated	5478			0.050	0/20	10	S	BT
Syntex 54	Bel-Ray Company Incorporated	5838	Atoclor 1254		0.5 ml	0/20	10	S	BT
Templube Grease 124	National Engineering Products Company	542			0.050	2/7	10	U	U
Ucon Lubricant 50 IIB-280X	Union Carbide Corporation	3214	Polyalkylene glycol		0.050	4/20 0/20	10 5	U	U
Ucon Lubricant 50 IIB-280X	Union Carbide Corporation	785	Polyalkylene glycol		0.050	2/2 1/18	10 5	U	U
Ucon Lubricant 50 IIB-280X	Union Carbide Corporation	3207	Polyalkylene glycol		0.030	2/20	10	U	U
Ucon Fluid 1B-300X	Union Carbide Corporation	4416	Polyalkylene glycol		0.050	5/20	10	U	U
Ucon Fluid 50-LB-65	Union Carbide Corporation	433	Polyalkylene glycol		0.050	1/3 1/3 1/3	10 5 3	U	U
Ucon Fluid LB-135	Union Carbide Corporation	434	Polyalkylene glycol		0.050	1/2	10	U	U
Ucon Lubricant 1B300X	Union Carbide Chemical Company	4411	Polyglycol base lubricant		0.050	5/20	10	U	U
Valve Seal A	Dow Corning Corporation	10335	Silicone		0.050	7/20	10	U	U
Versilube Fluid F-50	General Electric Company	238	Silicone		0.050	2/2 2/2	10 5	U	U
Versilube Fluid G-300	General Electric Company	270	Silicone		0.050	2/10	10	U	U
Viscisl Fluid 5000	General Electric Company	552	Silicone	Violent explosion	0.050	1/20	10	U	U
Vydax 325	E.I. du Pont de Nemours & Company, Incorporated	7391	Fluorocarbon Telomer Dispersion	Stainless steel inserts Dipped and dried 24 hours		0/20	10	S	BT
Vydax 550	E.I. du Pont de Nemours & Company, Incorporated	7390	Fluorocarbon Telomer Dispersion	Stainless steel inserts Dipped and dried 24 hours		0/20	10	S	BT
Vydax 550	E.I. du Pont de Nemours & Company, Incorporated	7211	Fluorocarbon Telomer Dispersion		0.5 ml	0/20	10	S	BT

TABLE I. LUBRICANTS (Concluded)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch.)	No. Reactions/ No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
Vydax AR	E.I. du Pont de Nemours & Company, Incorporated	7388	Fluorocarbon Telomer Dispersion	Stainless steel inserts Dipped and dried 24 hours		0/20	10	S	BT
Vydax AR	E.I. du Pont de Nemours & Company, Incorporated	7389	Fluorocarbon Telomer Dispersion	Stainless steel inserts Spray-Coated, dried 24 hours		0/20	10	S	BT
WD-40 Stoprust	Rocket Chemical Company	2467		Violent explosions	Spray Film	3/24 2/15	10 5	U	U
Whytelcote 505	Alpha Molykote Corporation	3469			0.002	1/1 1/1 1/1 1/2	10 5 3 1	U	U
Wire-tube Pulling Lubricant	Ideal Industries Incorporated	4080			0.050	0/20	10	S	I
XLE-42 Fluid	Union Carbide Corporation	926	Silicone		0.050	0/20	10	S	I
X520	Union Carbide Corporation	876	Silicone		0.050	2/20	10	U	U
Sample IIF	Union Carbide Corporation	1449	70% Ucon 65LB		0.050	5/20 4/20	10 5	U	U
X-15 Inorganic Bonded Dry Film Lubricant	Alpha Molykote Corporation	7362		Stainless steel inserts chip coated		0/20	10	S	S
X-15 Inorganic Bonded Dry Film Lubricant	Alpha Molykote Corporation	6970		Stainless steel inserts brush coated, 24 hours air dry		0/20	10	S	S
XG-54034	Dow Corning Corporation	5833			0.050	2/100	10	S	BT
25% Ikastol 75% Fluorocarbon 208		6966			0.5 ml	4/20	10	U	U

TABLE II. SEALANTS AND THREADING COMPOUNDS

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (in.)	No. Reactions/No. Tests	Energy Level (kg/m)	Batch or Jar Rating	Material Rating
All Purpose Tape Uxyle	T. C. Whitlam Manufacturing Co.	6649		Stainless steel inserts	0.063	0/20	10	S	S
Arakord 1333	Lehigh Chemical Company	734	Antimony compound in fluorosulfonic fluid	Corrosive to aluminum alloys	0.030	0/34	10	S	L
Antiseizing Extreme Pressure Lube No. 3	Chicago Manufacturing and Distributing Company	3712			0.070	2/20	10	U	U
Antiseizing Extreme Pressure Lube No. 3	Chicago Manufacturing and Distributing Company	3772			Thin film	10/20	10	U	U
Antiseize Compound 32Z	Materials Division, MSFC	2102			0.050	0/20	10	S	BT
AR-1F (Lot 67)	Materials Division, MSFC	1462	Aroclor 1254 and graphite		0.030	0/20	10	S	BT
AR-1F	Hayes Aircraft Corporation	3129	Aroclor 1254 and graphite		0.050	0/20	10	S	BT
AR-1F	Hayes Aircraft Corporation	4507			0.050	0/20	10	S	BT
Blue Coop Thread Lubricant	Crawford Fitting Company	8216	Chlorofluorocarbon oil base		0.050	0/20	10	S	BT
Conley Teflon Paste	Conley Corporation	9139	Tetrafluoroethylene base		0.050	0/20	10	S	BT
Dag Dispersion No. 217	Acheson Colloids Company	84		Thirty-three batches tested	0.050	1/10	10	I	I
Dag Dispersion 1730	Acheson Colloids Company		Aroclor 1254 and graphite		0.050	0/20	10	S	BT
Dag Dispersion 1730, Lot 500	Acheson Colloids Company	9122	Aroclor 1254, graphite	Eight tubes evaluated	0.050	0/160	10	S	BT
Dag Dispersion 1730, Lot 500	Acheson Colloids Company	8709	Aroclor 1254, graphite	Seven tubes evaluated	0.050	0/140	10	S	BT
Dag Dispersion 1730, Lot 500	Acheson Colloids Company	9157	Aroclor 1254, graphite	Six tubes evaluated	0.050	0/120	10	S	BT
Dag Dispersion 1730, Lot 500	Acheson Colloids Company	9276	Aroclor 1254, graphite	Four tubes evaluated	0.050	0/80	10	S	BT
Dag Dispersion 1730, Lot 500	Acheson Colloids Company	10285	Aroclor 1254, graphite	One tube evaluated	0.050	0/20	10	S	BT

TABLE II. SEALANTS AND THREADING COMPOUNDS (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/ No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
Dag Dispersion 1730, Lot 501	Acheson Colloids Company	10286	Aroclor 1254, graphite	Three tubes evaluated	0.050	0/60	10	S	BT
Dag Dispersion 1730 Lot 60-139	Acheson Colloids Company	5907	Aroclor 1254 & graphite	No adhesive	0.050	0/20	10	S	BT
Lot 500		7072	Aroclor 1254 & graphite		0.050	0/20	10	S	BT
Lot 501		7005	Aroclor 1254 & graphite		0.050	0/20	10	S	BT
Dag Dispersion 1730, Lot 500	Acheson Colloids Company	4662			0.050	0/20	10	S	BT
Easy Wrap Pipe Joint Tape	J.A. Sexauer Manufacturing Co.	4368	Teflon	Two batches tested	0.003	0/20	10	S	BT
Fluoro seal	Industrial Plastic Fabricators Incorporated	485	Water dispersion of Teflon and ammonia		0.050	0/20	10	S	RT
Liquid O-ring No. 1235	Oil Center Research				0.050	0/20	10	S	BT
Leak Lock	Highside Chemical Company Incorporated	545			0.050	1/11	10	U	U
Loctite A	American Sealants Company	827			0.050	2/7 2/2	10 5	U	U
LOX-Lube (Spec NA-2-20502)	North American Aviation	249	Graphite and chlorinated hydrocarbon	Sensitivity varies from batch to batch	0.050	10/20	10	U	BT
LOX-Sealant (Spec NA-2-20502)	North American Aviation		15% Dixon 200-10 graphite 85% Aroclor 1254	Sensitivity varies from batch to batch	0.050	2/20	10	U	BT
LOX-Safe	Redel Incorporated	7959	Graphite and chlorinated hydrocarbon	Sensitivity varies from batch to batch	0.050	2/20	10	U	BT
LOX Sealant	Rolls Royce Limited	935	Graphite, chlorinated hydrocarbon		0.050	0/20	10	U	BT
Oxyseal	Parker Appliance Company	217	Graphite and chlorinated hydrocarbon		0.050	6/10 0/12	10 3	U	U
Permatex 1516	Permatex Company Incorporated	861	Graphite and chlorinated hydrocarbon		0.050	4/60	10	U	U
Plastic Lead Seal No. 1	Crane Packing Company	234	Lead compounds in rubber binder		0.050	3/10 1/20 1, 10	10 8 7	U	U



TABLE II. SEALANTS AND THREADING COMPOUNDS (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/ No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
Plastic Lead Seal No. 2	Crane Packing Company	744	Lead compounds in runner binder		0.050	2/6	10	U	U
Plastic Lead Seal No. 4	Crane Packing Company	236	Lead compounds in rubber binder		0.050	2/3 2/10 0/10	10 5 3	U — —	U — —
Potting Compound No. 420	Carl Biggs Company	520			0.050	3/14 1/20	10 5	U —	U —
Rectorseal 25X-1	Rector Well Equipment Company Incorporated	169	Graphite and chlorinated hydrocarbon		0.050	2/10	10	U	U
Rectorseal No. 15	Rector Well Equipment Company Incorporated		Graphite and chlorinated hydrocarbon		0.050	1-5/20	10	U	U
Reddy-Lube No. 2	Redel Incorporated	245	Graphite and chlorinated hydrocarbon	Sensitivity varies from batch to batch	0.050	0-2/20	10	—	BT
Reddy-Lube No. 2	Redel Incorporated		Graphite and chlorinated hydrocarbon	Thin samples		3-5/20 1/12	10 7	U —	BT —
Sauereisen No. 1	Sauereisen Cements Company	744			0.050	2/2 1/18	10 5	U —	U —
Sauereisen No. 51	Sauereisen Cements Company	351			0.050	0/20	10	S	BT
Sauereisen No. 52	Sauereisen Cements Company	289			0.050	1/1 1/1 1/1 1/2	10 7 5 3	U — — —	U — — —
Seal-Rite No. 5	Macksons Company	241	Graphite, aluminum silicate binder, and carbohydate vehicle	Sensitivity varies from batch to batch	0.050	0-2/20	10	—	BT
Sexauer "Easy Wrap" Pipe Joint Tape	J.A. Sexauer Manufacturing Company	5894	Teflon	Stainless steel inserts	0.0035	0/20	10	S	S
Sexauer "Easy Wrap" Pipe Joint Tape	J.A. Sexauer Manufacturing Company	6389	Teflon	Stainless steel inserts	0.0035	0/20	10	S	S

TABLE II. SEALANTS AND THREADING COMPOUNDS (Concluded)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/ No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
Sodium Silicate and Graphite	Materials Division, MSFC	580	Sodium silicate and graphite		0.050	0/20	10	S	BT
Sodium Silicate and Talc	Materials Division, MSFC	723	Sodium silicate and talc		0.050	0/20	10	S	BT
Thread Compound No. 265	Valley Products Company	9295			0.050	2/20	10	U	U
Thread Compound No. 265	Valley Products Company	507			0.050	2/37	10	U	U
Thread Lube	Parker Appliance Company	273			0.050	1/2	10	U	U
						1/2	7	-	-
						1/2	5	-	-
						1/2	3	-	-
Tape Tite	Blue Seal Chemical Company	7919	Sintered Teflon		0.004	0/20	10	S	BT
Teflon Thread Seal Tape 121	Dodge Fibers Corporation	8381	Sintered Teflon	Eight rolls evaluated	0.003	0/160	10	S	S
Thread Seal Tape No. 121	Dodge Fibers Corporation	6952				0/20	10	S	S
Thread Seal Tape No. 121	Dodge Fiber Company	4371	Teflon	No adhesive	0.010	0/20	10	S	S
Teflon Thread Sealant S-22, Lot 66AME1-B	Saunders Engineering Company	8620	Sintered Teflon	Nine rolls evaluated	0.003	0/180	10	S	S
T-Film Thread Compound	Eco Engineering Company	820	Teflon-water dispersion		0.050	0/20	10	S	BT
Torq Compound	Torq Manufacturing Company	5481		Stainless steel inserts used	0.050	16/20	10	U	U
TFE Fluorocarbon Thread Sealing Tape	Raybestos-Manhattan Company	7058	TFE Teflon		0.003	0/20	10	S	BT
Universal Thread Seal Teflon Ribbon	W.S. Shambun and Company	2554	Teflon			0/20	10	S	BT
X-Pando	X-Pando Corporation	644	Silicate cement		0.050	0/20	10	S	BT

TABLE III. THERMAL AND ELECTRICAL INSULATIONS

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/ No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
AI-220	Anaconda Wire and Cable Company	7661	Amide-imide copolymer	Applied to 0.008-inch thick aluminum	0.001	8/20	10	U	U
AI-220	Anaconda Wire and Cable Company	7662	Amide-imide copolymer	Applied to 0.02-inch thick copper	0.007	6/20	10	U	U
Aluminum and Mylar Covering from Fibrous Glass Insulation	Fibrous Glass Incorporated	3799	Aluminum and Mylar			2/2	10	U	U
						2/4	5	-	-
						2/4	3	-	-
						2/4	1	-	-
						2/7	1/2	-	-
Alsinag Ceramic Insulation 196	American Lava Corporation	1006	Clonostatite crystals			2/20	10	U	U
Anaconda AI-200 Magnet Wire	Anaconda Wire and Cable Company	6925	Copper with amide-imide copolymer insulation	Stainless steel inserts	0.005	6/20	10	U	U
Armstrong Cork Style 7326	Armstrong Cork Company	9792			0.065	6/20	10	U	U
						3/20	7.7		
						1/20	5.6		
						2/20	3.5		
						1/20	2.8		
						0/20	1.4		
Armstrong Cork Style 9250	Armstrong Cork Company	8711			0.131	20/20	10	U	U
Ban-Roc Mineral Wool	Johns Manville Corporation	10247			0.090	0/20	10	S	BT
B-115 Coating	Westinghouse Corporation	7665		Applied to 0.008-inch copper	0.0005	5/20	10	U	U
AWG No. 22 Copper Wire Coated with Aluminum Phosphate Impregnated Felt Asbestos	General Electric Company	3197	Aluminum phosphate, asbestos, and copper			0/20	10	S	BT
Cable, Type 4TX-22-1934	Hi-Temp Wires Incorporated	1705				0/20	10	S	BT
Cable, Type 4TX-22-1934 Outside Covering	Hi-Temp Wires Incorporated	1778				3/20	10	U	BT
Cable Transonics, Type 1932	Suprenant Manufacturing Co.	1706				0/20	10	S	BT

TABLE III. THERMAL AND ELECTRICAL INSULATIONS (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
Chromel-Alumel, Teflon Singles, Nylon Wrap	Revere Corporation of America	1691	Chromel-Alumel, Teflon, and Nylon			3/20	10	U	U
Chromel-Alumel, Teflon Singles, Asbestos Jacket	Revere Corporation of America	1686	Chromel-Alumel, Teflon, and asbestos			2/2 2/2 2/10 1/6	10 5 3 2	U — — —	U — — —
Copper-Constantan Sinterex Teflon Tape Cover	Revere Corporation of America	1687	Copper Constantan, and Teflon			1/60	10	S	BT
Copper-Constantan Conductor with Polyvinyl Insulation	Revere Corporation of America	1682	Copper Constantan, and polyvinyl plastic			2/2 2/2 1/1 1/7	10 5 3 2	U — — —	U — — —
20-2 Conductor Standard No. 1741 Shielded	Alpha Wire Corporation	1681				3/4 2/15	10 5	U —	U —
Cellular Glass Insulation with Aluminum Vapor Barrier	Pittsburg-Corning Corporation	6247		Stainless steel inserts	0.4	17/20	10	U	U
Centaur Insulation		5972		Stainless steel inserts	0.407	11/20 11/20 14/20 20/20 18/20 9/20	10 8 6 4 2 1	U	U
Convair Liquid Hydrogen Insulation	Convair Division General Dynamics	3189	Phenolic resin, fiber-glass honeycomb, epoxy fiberglass sealer, epoxy adhesive		0.313	2/2 11/11 20/20 7/20 0/20	10 5 2 1 1/2	U — — — —	U — — — —
Coast Pro-Seal 777 Potting Compound	Coast Pro-Seal Manufacturing Company	5211		Two coats sprayed on aluminum inserts	0.025	18/20	10	U	U
Coast Pro-Seal 777 Potting Compound	Coast Pro-Seal Manufacturing Company	5212		One coat sprayed on aluminum discs	0.015	15/20	10	U	U

TABLE III. THERMAL AND ELECTRICAL INSULATIONS (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/ No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
Coast Pro-Seal 777P Primer and One Coat Coast Pro-Seal 777 Potting Compound	Coast Pro-Seal Manufacturing Company	5213		Sprayed on aluminum discs	0.015	17/20	10	U	U
Coast Pro-Seal 776 Primer and One Coat Proseal 777 Potting Compound	Coast Pro-Seal Manufacturing Company	5214		Sprayed on aluminum discs	0.015	19/20	10	U	U
Corning 7052 Glass	Corning Glass Company	7858			0.060	0/20	10	S	S
CPR-20 Insulation	Chemical Plastics Research International Corporation	4362		Density 4 lbs./ft. <sup>3</sup>	0.250	17/20 15/20 8/20 4/20 0/20	10 7 5 3 1	U -- -- -- --	U -- -- -- --
CPR-314 Foam	Upjohn Company	9810	Isocyanate		0.100	3/20	10	U	U
CPR-314 Foam	Upjohn Company	9846	Isocyanate		0.500	10/20	10	U	U
CPR-358-2 Foam	Upjohn Company	9883	Isocyanate		0.250	4/20	10	U	U
CPR-368 Foam	Upjohn Company	9830	Isocyanate		0.250	2/20	10	U	U
CPR-9005-2 Foam	Minnesota Mining and Manufacturing Company	9841	Isocyanate		0.500	7/20	10	U	U
CPR-1021-2 S-II Insulation	Chemical Plastics Research International Corporation	4573	Polyurethane		0.250	3/40 2/40 2/20 0/20 0/20	10 9 8 7 5	U -- -- -- --	U -- -- -- --
Dimplar Aluminized Mylar	Quality Electric Company	8377			0.001	15/80	10	U	U
Dynatherm D-65 Tape with Fiberglass Braid	Kennedy Space Center	7955	Filled polyurethane		0.075	0/20	10	S	BT
Dynatherm D-65	Dynatherm Chemical Corporation	5667		On aluminum discs	0.008 to 0.010	15/20 3/20	10 5	U	BT
Dynatherm D-65 plus a Modified Chlorinated Cellulose	Dynatherm Chemical Corporation	7115		Multiple tested inserts.	0.045	20/20	10	U	U

Material	Manufacturer of Coating	Part No.	Coating Color	Remarks	Thickness (in./in)	% Reaction/No. Tests	Energy Level (kg/m)	Ratio of Coating	Material Rating
Dynatherm D-65 and Fiberglass Tape with Dynatherm No. 908	Dynatherm Chemical Corp.	71-0		Stainless steel inserts	0.045	30/20	10	U	U
Dynatherm D-65 Tape	Dynatherm Chemical Corp.	6-05		Stainless steel inserts	0.038	0/20 0/20	12 10	S	B+
Dyna-Therm D-65	Dyna-Therm Chemical Corporation	36-2	Ether polyethylene	8 to 10 mils on aluminum disc		15/20 2/20	10 5	U	B+
Dyna-Therm D-65	Dyna-Therm Chemical Corporation	25-1	Polymethacrylate sodium phosphate sodium borate and carbon		0.065	0/40	10	S	B+
Dyna-Therm D-65	Dyna-Therm Chemical Corporation	32-9	Polymethacrylate sodium phosphate sodium borate and carbon		0.125	0/20	10	S	B+
Dyna-Therm D-65	Dyna-Therm Chemical Corporation	32-5	Polymethacrylate sodium phosphate sodium borate and carbon	Aged 8 months	0.063	0/20	10	S	B+
Dyna-Therm D-65 with 904 Coating	Dyna-Therm Chemical Corporation	32-1	Polymethacrylate sodium phosphate sodium borate and carbon		0.063	0/20	10	S	B+
Dyna-Therm E-904	Dyna-Therm Chemical Corporation	23-25	Polymethacrylate		0.050	0/20 2/15 0/20	10 5 4	U	U
Dyna-Therm D-100	Dyna-Therm Chemical Corporation	18-01	Polymethacrylate		0.063	2/20 1/40	10 2	U	U
Dynatherm 43-57	Dynatherm Chemical Corp.	56-9	Polymethacrylate	Applied on aluminum disc		1/60	10	S	B+
Dynatherm Custom Compound, LOX Composite Coating D-1427, (New Formulation) Batch 51495	Dynatherm Chemical Corp.	60-05		Stainless steel inserts applied, air cured 18 hours		2/20	10	U	U
Dynatherm C-4327 (New Formulation) Batch 51495	Dynatherm Chemical Corp.	60-04		Stainless steel inserts applied, air cured 18 hours		5/20	10	U	U

TABLE III. THERMAL AND ELECTRICAL INSULATIONS (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/ No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
Electroplast	Duetsch Laboratories	4523		On stainless steel strips		13/17	10	U	U
Electroplast 202	Duetsch Laboratories	4800		Stainless steel cups used		2/2 2/3 2/3 2/12	10 5 3 1	U - - -	U - - -
EPI Resin 560	Jones Debney Corporation	7660	Epoxy	Applied to 0.012-inch thick copper	0.005	9/20	10	U	U
EPI Resin 560	Jones Debney Corporation	7659	Epoxy	Applied to 0.008-inch thick aluminum foil	0.001	9/20	10	U	U
Fiber Frax	Carborundum Company	2355	Mineral fiber	With aluminum foil backing		4/40	10	U	U
Fiber Frax (XSW)	Carborundum Company	2381	Mineral fiber			2/20	10	U	U
Fiber Frax	Carborundum Company	2410	Mineral fiber	Heat treated 3 hours at 1000°F		0/20	10	S	BT
Fibrous Glass Insulation	Fibrous Glass Incorporated	3798	Glass		0.125	2/2 2/2 2/2 2/2	10 5 3 1	U - - -	U - - -
Fiberglass Insulation No. 1000	Gustin-Bacon Ultralite	5057			0.050	2/3 3/5 6/20 4/20	10 5 3 1	U - - -	U - - -
Flamemastic No. 700	Dynatherm Chemical Corp.	4584			0.050	3/40	10	U	U
Fenuglass Insulation	Pittsburgh-Corning Corporation	799	Cellular glass			0/20	10	S	S
Fenuglass Insulation	Pittsburgh-Corning Corporation	975				2/2 2/3 2/2	10 5 3	U - -	U - -
Fenuglass Insulation	Pittsburgh-Corning Corporation	975				0/20	10	S	S

TABLE III. THERMAL AND ELECTRICAL INSULATIONS (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (in.)	No. Reactions/ No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
Formvar	Astrionics Laboratory	7664		Applied to 0.016-inch thick copper	0.0004	12/20	10	U	U
Foster Fire Resistive Coating 60-30N	Benjamin Foster Company	1017				2/2 2/5 2/2	10 5 2	U	U
Foster Flexias Bonding Agent 82-10	Benjamin Foster Company	970				0/20	10	S	U
Foster Fire Resistive Coating 60-65	Benjamin Foster Company	1016				2/2 2/2 2/7	10 5 2	U	U
Foster Sealfas Insulation Coating 31-96	Benjamin Foster Company	968				2/4 2/4 2/5	10 5 2	U	U
Frit No. 1	Lear Siegler Corporation	4491	80-85% lead oxide, 15% silicon dioxide, less than 5% unknown oxide	Tested on nickel strips		0/20	10	S	S
Frit No. 1 Modified with Cerium Oxide	Lear Siegler Corporation	4470		Tested on nickel strips	0.025	0/20	10	S	S
Glass Fiber "B" No. 621	Owens-Corning Corporation	2357	Glass		0.063	0/40	10	S	S
Glass No. 621	Owens-Corning Corporation	2378	Glass		0.063	0/20	10	S	S
Hexcell 91LD	Hexcell Products Company	4234	Honeycomb phenolic and epoxy		0.063	20/20 20/20 20/20 15/20	10 5 3 1	U	U
Hexcell Polyurethane Insulation 1414-2	Hexcell Products Company	3680	Polyurethane		0.250	20/20 19/20 8/20 0/20	10 5 3 2	U	U
HRP Honeycomb Filled with CPR-1021-2		4570		Bonded to 2014T-6 aluminum with Aerobond 430-7	0.250	20/20 20/20 2/20	10 3 1	U	U



TABLE III. THERMAL AND ELECTRICAL INSULATIONS (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/ No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
H-Film Conductor Cable		4471 5203	H-Film insulation, copper conductor, FEP adhesive		0.030 0.030	4/20 4/20	10 10	U U	U U
H-Foam 490	E.I. du Pont de Nemours & Company, Incorporated	5655 5654		Stainless steel inserts Stainless steel inserts	0.065 0.11	0/20 0/40	10 10	S S	I I
H-Foam 536	E.I. du Pont de Nemours & Company, Incorporated	5658 5657		Stainless steel inserts Stainless steel inserts	0.055 0.13	0/20 0/20	10 10	S S	I I
Inserts, Fired Durock Type D117-063	Physical Science Corporation	3220	Lead oxide, cobalt oxide, nickel oxide, and bismuth oxide			0/20	10	S	S
Insulation		5405	Vitel PE-20% adhesive and resin (polyester) foam Freon blown polyurethane in the skin of 1/2 mil Mylar and 1/2 mil aluminum		0.400	42/120 22/100 25/100 71/100 78/100 55/100	10 8 6 4 2 1	U - - - - -	U - - - - -
Isowood	North American Aviation	3209	Quartz spheres and epoxy		0.125	15/20 7/20 2/20 0/20	10 7 5 3	U - - -	U - - -
Johns-Manville Rock Cork Insulation	Johns-Manville Company	800	Mineral fiber			2/5 2/7 1/8	10 5 2	U - -	U - -
Johns-Manville Thermobestos Insulation	Johns-Manville Company	795	Calcium silicate			0/20	10	S	S
Johns-Manville Thermomat Style 281	Johns-Manville Company	3228	Asbestos felt saturated with phenolic resin and inorganic filler		0.063	11/20 6/20 5/20 3/20 0/20	10 5 3 2 1	U - - - -	U - - - -

TABLE III. THERMAL AND ELECTRICAL INSULATIONS (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/ No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
Kaowool	Babcock and Wilcox Company	2346	Ceramic fiber	Two batches tested		2/20 0/20	10 5	U -	U -
Kaowool	Babcock and Wilcox Company	2488	Ceramic fiber	Heat treated 2 hours at 1000°F	0.063	0/40	10	S	BT
Kaowool	Babcock and Wilcox Company	6945	Ceramic fiber	Heat treated 2 hours at 1000°F	0.415	0/20	10	S	BT
Larodyne Foam	North American Rockwell Corporation	9352	Polyurethane	NAA-3310-23-4	0.050	34/40	10	U	U
Magnolia Foam 7015-I	Magnolia Plastics Incorporated	4558			0.250	20/20 20/20 17/20 4/20 3 0/20	10 5 4 3 2	U - - - -	U - - - -
Marinite 23A	Johns-Manville Company	5665			Approx. 0.0625	0/20	10	S	BT
Micro-Fibrous Felt No. 108	Johns-Manville Company	4027	Glass		0.125	0/20	10	S	BT
Micro-lite Fiber Glass Insulation	Johns-Manville Company	3126	Fiberglass		0.094	0/20	10	S	BT
Micro-Quartz	Johns-Manville Company	2347	Quartz fibers			5/40	10	U	U
Micro-Quartz	Johns-Manville Company	2382	Quartz fibers	Heat treated inserts used		1/20	10	I	I
ML Enamel	E.I. du Pont de Nemours and Company	7666		Applied to 0.002-inch thick aluminum	0.001	3/60	10	U	BT
Potassium Titanate		2221	Potassium titanate		0.063	8/40	10	U	U
Potassium Titanate		2728	Potassium titanate	Heated 4 hours at 1000°F	0.063	0/20	10	S	BT
RL-2405 Foam 5#/ft <sup>3</sup> density	Raybestos Manhattan Corporation	6098			0.402	13/20 11/20 19/20 20/20 18/20 2/20	10 8 6 4 2 1	U - - - - -	U - - - - -

TABLE III. THERMAL AND ELECTRICAL INSULATIONS (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/ No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
RL 2405 Foam	Raybestos-Manhattan Corporation	5982	3 mil aluminum foil, Adiprene L-100	Stainless steel inserts	0.500	20/20 14/20 20/20 20/20 14/20 0/20	10 8 6 4 2 1	U	U
Styrofoam 1.6#/ft <sup>3</sup> density	Dow Chemical Company	6237		Stainless steel inserts	0.401	4/20 3/20 4/20 8/20 10/20 7/20	10 8 6 4 2 1	U	U
Styrofoam 1.6#/ft <sup>3</sup> density	Dow Chemical Company	6322		Stainless steel cups	0.401	2/20 2/20 5/20 10/20 16/20 7/20	10 8 6 4 2 1	U	U
Silvered Cage Twenty Four Conductor Wire	Revere Corporation of America	1688	Silvered gage twenty-four conductor wire, Inner wire insulation-revcothene. Outer covering Geon Shield-Tinned Copper		0.594	2/2	10	U	U
Silicone RTV Foam QR 7131	Dow-Corning Corporation	3769	Silicone		0.250	4/20 3/20 0/20	10 5 3	U	U
Scotch Foam I Insulation	Minnesota Mining and Manufacturing Company	798	Foamed plastic		0.060	2/2 2/12 0/5	10 5 3	U	U
Smooth On Cement	Smooth On Manufacturing Company	1646			0.050	0/20	10	S	S
Snap On Insulation	Gastin-Racoon Company	796	Glass fiber-organic filled			2/20	10	U	U
Stafam Insulation AA 202	Dayton Rubber Company	781				3/20	10	U	U

TABLE III. THERMAL AND ELECTRICAL INSULATIONS (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/ No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
Styrofoam Insulation C-02	Dayton Rubber Company	782				2/8 2/4 0/8	10 5 3	U - -	U - -
Styrofoam Insulation No. 33	Styrofoam Plastics Corporation	707	Styrofoam			2/3 3/4	10 5	U -	U -
Silvered Gage Twenty Four Conductor Wire	Revere Corporation of America	1688	Silvered gage twenty-four conductor wire. Inner wire insulation-revoethene. Outer covering Geon Shield-Tinned Copper		0.594	2/2	10	U	U
Teflon Type 2857, No. 18 Strained Copper, Silver Coated		1690	Teflon, copper, and silver			0/20	10	S	BT
Tensolite Alpha Type 2812-2	Alpha Wire Corporation	1684				2/11 2/3 1/6	10 5 3	U - -	BT - -
Tensolite Alpha Type 2812-4	Alpha Wire Corporation	1683				0/20	10	S	BT
Type 2TX-22-1934ZX Wire	Hi-Temp Wires Incorporated	1679	Stranded silver-plated copper conductor with extruded Teflon insulation, shielded in tinned copper. Outside polyvinyl chloride			2/2 1/1 2/12 0/5	10 5 3 2	U - - -	U - - -
		1680				2/11 1/9	5 3	- -	- -
Thermo-Resist 69	Thermo Resist Company	3674	Phenylated nylon			11/20 8/10 4/10	10 5 3	U - -	U - -
Thermofil TFE (Size No. 10, Control No. C 415-63-2)	Rayclad Tubes Incorporated	4810		Stainless steel inserts used		0/20	10	S	S
Thermolog T-230	Emerson Electric Manufacturing Company	5381		Stainless steel inserts coated with Thermolog	0.116	20/20	10	U	U
Thermolog T-500	Emerson Electric Manufacturing Company	5482		Stainless steel inserts coated with Thermolog	0.015	8/20	10	U	U

TABLE III. THERMAL AND ELECTRICAL INSULATIONS (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/ No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
Unicrest Insulation, Outer Covering	United Cork Company	788				2/2 2/2 2/3	10 5 3	U — —	U — —
Unicrest Insulation	United Cork Company	747				2/2 2/4 0/14	10 5 3	U — —	U — —
Unicrest Type S E Insulation	United Cork Company	709				2/20 2/20	10 5	U —	U —
Vimasco Insulation Coating WC-1	Vimasco Corporation	921				2/3 2/2 2/4	10 5 3	U — —	U — —
Vimasco Carlon Insulation Coating 500	Vimasco Corporation	919				3/20	10	U	U
White Mercury Resistant Electrical Insulation Coating 168-W-20	W.P. Fuller and Company	4012	Modified silicone	Baked on stainless steel inserts	Brush coat	2/20	10	U	U
Wire, Ceramic Coated Nickel-Clad Copper	General Cable Corporation	3218	Ceramic coated, nickel-clad copper			23/40	10	U	U
Wire, Ceramic Coated Nickel-Clad Copper	General Cable Corporation	3322	Ceramic coated, nickel-clad copper			20/40 9/20	10 5	U —	U —
Wire Coated with ML Enamel	General Cable Corporation	4009				0/20	10	S	BT
Wire Coated with ML Enamel and Covered with Felt Asbestos	General Cable Corporation	4008				0/20	10	S	BT
ML Wire Enamel RC-5019	E.I. du Pont de Nemours & Company, Incorporated	6769		Thin coat applied on stainless steel inserts, air dry 30 minutes, bake 60 min at 105°C, bake 10 min at 400°C		0/20	10	S	BT
Wire: MIL-W-16878C, Type E: [3 conductor No. 20, twisted and shielded (complete wire)] [3 small conductor wires] [outside cover]		6631		Stainless steel inserts, cleaned with trichloroethylene	0.163	0/20	10	S	BT
		6629			0.063	0/20	10	S	BT
		6634			0.010	0/20	10	S	BT
				Same as above					

TABLE III. THERMAL AND ELECTRICAL INSULATIONS (Concluded)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/ No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
Wire: MIL-C-27500-20T-3-N-o [Teflon covered, 3 conductor No. 20 (twisted and shielded)] [3 small conductor wires] [1 small conductor wire] [Label] [Outside cover]  Zeolite 5A	H F Suprenant, Incorporated	6636		Same as above	0.230	0/20	10	S	BT
		6633		Same as above					
		6632		Same as above	0.082	7/20	10	U	BT
		6634		Same as above	0.0015	0/20	10	S	BT
		6635		Same as above	0.025	0/20	10	S	BT
	Kennedy Space Center	9351			0.050	0/20	10	S	BT



TABLE IV. PLASTICS, FLUOROCARBONS, AND COMPOSITES (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/ No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
Aluminum discs cemented with polyurethane and edge coated with Dynatherm D-65		5734 5736				0/20 0/20	10 5	S S	BT BT
Aluminum discs cemented with polyurethane and potted with Dynatherm D-65		5737			0.5	2/12 2/2 1/20	10 8 6	U	BT
Aluminized Nylon		6253 6255		Stainless steel inserts	0.003	8/20 9/20	10 10	U	U
Aluminized Mylar	Kennedy Space Center	9915		Ten sheets stacked	0.003	7/20	10	U	U
Amoco Adhesive F-88	American Consolidated Manufacturing Company	3404	Fluorohalocarbon		0.050	2/3 2/11 0/20	10 5 1	U U -	U U -
Armstrong Cement	Armstrong Products Company	657			0.050	2/2 1/1	10 5	U -	U -
Araldite 6010 and Catalyst 125	CIBA Chemical Company	743	Epoxy		0.050	3/3 2/4 2/2	10 5 2	U U -	U U -
Armulon PDX7700B	Du Pont	4802	Teflon felt	Bleach	0.063	0/20	10	S	S
Anaprene (urethane rubber)	E.I. du Pont de Nemours & Company, Incorporated	6067		Stainless steel inserts	0.172	20/20	10	U	U
Ben-Har Lacing Tape	Bentley Harris Manufacturing Company	7063		Stainless steel inserts as received	0.015	0/20	10	S	S
B.F.C. Transparent Blue Liquid Envelope	Better Finishing Company Incorporated	3840		Film on stainless steel inserts		2/10 2/13 0/20	10 5 2	U U -	U U -
Blastguard Tape Grade AAA	H.K. Porter Company Incorporated	2327		Treated pressure sensitive tape	0.125	12/20 2/11 0/5	10 5 3	U U -	U U -
Blastapw MX4647	Johns-Manville Company	2328			0.125	0/20	10	S	BT
Buna-N Rubber		656				2/3	10	U	U



TABLE IV. PLASTICS, ELASTOMERS, AND ADHESIVES (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/ No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
Butyl Fairprene	E.I. du Pont de Nemours & Company, Incorporated	618	Fabric impregnated with butyl rubber			4/6 2/20	10 5	U -	U -
Caram Cement	Caram Manufacturing Company	5728	1 part E918A butyl adhesive, Component A, 1 part E918B butyl adhesive, Component B, and 1 part toluene	Cured 48 hours at room temperature	0.035	18/20 18/20 16/20 11/20 1/20 0/20	10 8 6 4 3 2	U	U
Celcon	Celanese Corporation	5914			0.003	12/20 9/20 5/20 3/20 4/20 1/20	10 8 6 4 2 1	U	U
Chemlok 203, Set No. 1	Hughson Chemical Company	6623		Stainless steel inserts, cured for 1/2 hour at 50°C, 1 hour at 100°C, 16 hours at 150°C	0.062	4/20 3/20 2/20 2/20 0/20 0/20	10 8 6 4 2 1	U	U
Chemlok 203, Set No. 2	Hughson Chemical Company	6616		Stainless steel inserts cured for 1/2 hour at 50°C, 1 hour at 100°C, 1 hour at 150°C, 16 hours at 200°C		3/40 2/60 0/20 0/20	10 8 6 4	U	U
Chemlok 220-123	Hughson Chemical Company	6943		Stainless steel inserts	0.062	5/20 2/20 2/20 3/20 0/20 0/20	10 8 6 4 2 1	U	U
Chemlok 220-205	Hughson Chemical Company	6937		Stainless steel inserts	0.064	4/20 5/20 4/20 2/20 0/20 0/20	10 8 6 4 2 1	U	U

TABLE IV. PLASTICS, ELASTOMERS, AND ADHESIVES (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
Cotton Fabric Treated with THPC	Hooker Chemical Company	6979			0.018	19/20 13/20 2/20 0/20	10 5 2 1	U	U
CS 2727 Epoxy and Accelerated 9817	Chem-Seal Corporation of America	6932	100 gms epoxy 21 gms catalyst	Air Dried 72 hours	0.050	9/20 8/20 6/20 6/20	10 8 6 4	U	U
Coast Pro Seal 793	Coast Pro Seal Manufacturing Company	2759	Polyurethane		0.063	2/7	10	U	U
Compound Rubber X-58	Bacon Industries Incorporated	280	Teflon impregnated silicone rubber			2/3	10	U	U
C328 RTV	Connecticut Hard Rubber Company	4822	Viton base adhesive		0.015 to 0.025	2/4 2/6 2/6 2/11 0/20	10 5 3 2 1	U - - - -	U - - - -
Compound TH-1057 Rubber	Stillman Rubber Company	5729	Fluorinated silicone		0.100	15/20 10/20 11/20 3/20 0/20	10 8 6 4 2	U - - - -	U - - - -
Compound TH-1057 Rubber	Stillman Rubber Company	2385	Fluoro-silicone		0.063	0/20	10	U	U
Crystal MG Inorganic Paper	Minnesota Mining and Manufacturing Company	3195			0.003	2/20	10	U	U
Crystal MP Inorganic Paper	Minnesota Mining and Manufacturing Company	3196			0.003	0/20	10	S	BT
Crystal M Inorganic Paper	Minnesota Mining and Manufacturing Company	3194			0.003	0/20	10	S	BT
Cryo-Mastic IC-531	Insul-Coustic Company	9215		Vapor barrier	0.025	15/20 11/20 14/20 14/20 12/20	10 7.7 5.6 3.5 1.4	U	U

TABLE IV. PLASTICS, ELASTOMERS, AND ADHESIVES (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/ No. Tests	Energy/ Level Kg/m	Batch or Jar Rating	Material Rating
Cycolac LT-1000	Marbon Chemical Corporation	8513	Styrene		0.010	20/20 20/20 20/20 18/20 14/20	10 7.7 5.6 3.5 1.4	U	U
Cycolac LT-1000	Marbon Chemical Corporation	8518	Styrene		0.020	20/20 20/20 20/20 16/20 9/20	10 7.7 5.6 3.5 1.4	U	U
Cycolac LT-1000	Marbon Chemical Corporation	8523	Styrene		0.030	20/20 19/20 17/20 13/20 10/20	10 7.7 5.6 3.5 1.4	U	U
Cycolac LT-1000	Marbon Chemical Corporation	8528	Styrene		0.040	19/20 20/20 14/20 8/20 3/20	10 7.7 5.6 3.5 1.4	U	U
Cycolac LT-1000	Marbon Chemical Corporation	8533	Styrene		0.050	19/20 19/20 10/20 8/20 1/20	10 7.7 5.6 3.5 1.4	U	U
Cycolac LT-1000	Marbon Chemical Corporation	8538	Styrene		0.060	20/20 15/20 19/20 10/20 1/20	10 7.7 5.6 3.5 1.4	U	U
Cycolac LT-1000	Marbon Chemical Corporation	8543	Styrene		0.080	15/20 4/20 2/20 3/20 2/20 2/20 0/20	10 7.7 5.6 4.2 3.5 2.3 1.4	U	U

TABLE IV. PLASTICS, ELASTOMERS, AND ADHESIVES (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
Dalbon Fluorocarbon Resin	Diamond Alkali Company	8795	Polyvinyl Fluoride	Applied on stainless steel discs	0.005	9/20	10	U	U
D.C. 274 Adhesive	Dow Corning Corporation	640	Silicone			2/8 0/12	10 5	U	U
D.C. 325	Dow Corning Corporation	4480	Silicone		0.050	3/3 2/11 1/13 1/2 0/21	10 5 4 3 2	U	U
DC 94-017	Dow Corning Corporation	7981	Fluorosilicone		0.050	2/20	10	U	U
DC 94-017	Dow Corning Corporation	7985	Fluorosilicone		0.075	0/20	10	U	U
DC 94-017	Dow Corning Corporation	7984	Fluorosilicone		0.106	4/20	10	U	U
DC 94-018	Dow Corning Corporation	7982	Fluorosilicone		0.050	5/20	10	U	U
DC 94-018	Dow Corning Corporation	7982	Fluorosilicone		0.084	4/20	10	U	U
DC 94-018	Dow Corning Corporation	7986	Fluorosilicone		0.100	4/20	10	U	U
DC 94-019	Dow Corning Corporation	7983	Fluorosilicone		0.060	3/20	10	U	U
DC 94-019	Dow Corning Corporation	7988	Fluorosilicone		0.090	0/20	10	S	BT
DC 94-019	Dow Corning Corporation	7991	Fluorosilicone		0.224	1/60	10	S	BT
DC 93-019	Dow Corning Corporation	8208	Silicone ablative material		0.115	4/20 1/20 0/20	10 7.7 5.6	U	U
DC 93-019 and DC 94-003	Dow Corning Corporation	8213	Silicone ablative material		0.070	6/20 4/20 8/20	10 7.7 5.6	U	U
Dow Corning No. 780 Sealant	Dow Corning Corporation	6931	Silicone	Air dried 72 hours	0.050	16/20 10/20 9/20 8/20 4/20	10 8 6 4 2	U	U

TABLE IV. PLASTICS, ELASTOMERS, AND ADHESIVES (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/ No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
Dodge Fibers Lacing Tape (L775-476)		7057	Teflon	Washed in F-33	0.010	0/20	10	S	BT
Dip Pak No. 661	Fidelity Chemical Corporation	3762	Cellulose acetate butyrate		0.063	2/10	10	U	U
Dip Pak No. 661	Fidelity Chemical Corporation	3764	Cellulose acetate butyrate	Stainless steel inserts dipped in molten Dip Pak	0.001	9/20 3/20 7/20 0/20	10 2 5 1	U - - -	U - - -
Du Pont II Film	E. I. du Pont de Nemours and Company, Incorporated	3647			0.002	0/20	10	S	BT
Du Pont II Film No. 67011 (361A)	E. I. du Pont de Nemours and Company, Incorporated	4192			0.002	14/20 2/20 2/20 0/20	10 5 3 1	U - - -	U - - -
Du Pont HT-1 No. 67014(171A)	E. I. du Pont de Nemours and Company, Incorporated	4198			0.010	4/4 4/4 2/8	10 5 1	U - -	U - -
Du Pont HT-1 Felt No. 1280-74-0	E. I. du Pont de Nemours and Company, Incorporated	4195			0.125	2/2 2/2 2/14 1/20	10 5 2 1	U - - -	U - - -
Du Pont HT-1 No. 380 369-370	E. I. du Pont de Nemours and Company, Incorporated	4197			0.030	2/2 2/2 2/2 3/3	10 5 2 1	U - - -	U - - -
Du Pont No. 97-001A	E. I. du Pont de Nemours and Company, Incorporated	3596	0.005 FEP laminated to TFE fabric and metalized with aluminum		0.010	0/20	10	S	S
Du Pont No. 506A112	E. I. du Pont de Nemours and Company, Incorporated	3595	Armalen and FEP dispersion coated glass		0.006	0/20	10	S	S
Du Pont ML Film	E. I. du Pont de Nemours and Company, Incorporated	3558			0.008	2/20 0/20	10 5	U	BT

TABLE IV. PLASTICS, ELASTOMERS, AND ADHESIVES (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/ No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
Du Pont ML Film	E. I. du Pont de Nemours and Company, Incorporated	3536			0.004	0/40	10	S	BT
Du Pont ML Film	E. I. du Pont de Nemours and Company, Incorporated	3555			0.002	0/40	10	S	BT
Dynatherm D-65A Primer	Dynatherm Chemical Corporation	9427			0.005	7/20 6/20 4/20	10 7.7 5.6	U - -	U - -
Dynatherm D-4327, Lot 30017	Dynatherm Chemical Corporation	9806		39 percent solids	0.010	2/20 3/20	10 7.7	U -	BT -
Dynatherm D-4327, Lot 30017	Dynatherm Chemical Corporation	9808		10 percent solids	0.010	0/20	10	S	BT
Dynatherm D-4327, Lot 10356	Dynatherm Chemical Corporation	8839		Ten coats brushed on stainless steel discs with 30 min. drying between coats 72 hrs drying after final coat.	0.009	3/20	10	U	BT
Dynatherm D-4327, Lot 10346	Dynatherm Chemical Corporation	8830		Stainless steel discs dip coated, dried for 45 hours	0.011	6/20 4/20 3/20 2/20 0/20	10 7.7 7.0 6.3 5.6	U - - - -	BT - - - -
Dynatherm D-4327, Lot 10346	Dynatherm Chemical Corporation	8836		Stainless steel discs, dip coated and oven dried at 95°F for 12 hours	0.007	12/40	10	U	BT
Dynatherm D-4327, Lot 10346	Dynatherm Chemical Corporation	8773		Stainless steel discs, dip coated and air dried for 72 hours	0.004	5/20	10	U	BT
Dynatherm D-4327, Lot 10346	Dynatherm Chemical Corporation	8663		Stainless steel discs, dip coated and air dried for 24 hours	0.002	3/20	10	U	BT
Dynatherm D-4327, Lot 10346	Dynatherm Chemical Corporation	8804		Stainless steel discs, dip coated and air dried for 18 hours	0.002	3/20	10	U	BT
Dynatherm D-4327, Lot 10346	Dynatherm Chemical Corporation	8664		Stainless steel discs, dip coated and air dried for 30 minutes	0.002	4/20	10	U	BT

TABLE IV. PLASTICS, ELASTOMERS, AND ADHESIVES (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/ No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
Dynatherm D-4327, Lot 10346	Dynatherm Chemical Corporation	8801		Stainless steel discs, dip coated in 10 percent solid D-4327 and air dried for 18 hours	0.002	0/40	10	S	BT
Dynatherm D-4327	Dynatherm Chemical Corporation	4381		Brushed on stainless steel inserts and air dried		0/60	10	S	BT
E-Bond Rubber Sealant	International Epoxy Corporation	4199	Epoxy and polysulfide	LP/32 activator	0.050	10/20 14/20 10/20	10 5 1	U - -	U - -
EC1944 B	Minnesota Mining and Manufacturing Company	2745			0.063	3/20 0/20	10 5	U -	U -
Ecco Bond No. 45 and Catalyst No. 15	Emerson and Cuming Incorporated	742	Epoxy Cement	Violent reactions	0.050	2/2 2/2 2/2	10 5 2	U - -	U - -
EC-1252 Adhesive	Minnesota Mining and Manufacturing Company	8252			0.050	20/20	10	U	U
Eimac 221	Eitel McCollough, Incorporated	7729	Polyphenyl		0.280	6/20	10	U	U
Epoxy Topping without Seal Coat	Toch Brothers Company	8374			0.35	11/20	10	U	U
Epoxy Topping with Seal Coat	Toch Brothers Company	8375			0.40	11/20	10	U	U
Epibond 123 and Hardner 952A	Furane Plastics Incorporated	741	Epoxy Cement	Violent reactions	0.050	5/20	10	U	U
Epon Glass Terminal Board		659				2/3 1/1	10 5	U -	U -
Epoxy Potting Compound	Bendix Corporation	1945	Epoxy		0.063	1/1 1/1 1/1	10 5 2	U - -	U - -
Epoxy Filled Glass Fabric (MIL-P-18177)	General Electric Company	3790	Epoxy-Glass	Type G.E.E. Grade G-10	0.063	19/20 4/20 3/20 0/20	10 5 2 1	U - - -	U - - -

TABLE IV. PLASTICS, ELASTOMERS, AND ADHESIVES (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/ No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
Epoxy Filled Glass Fabric (MIL-P-18177)	General Electric Company	4289	Epoxy-Glass	Type G.I.E. Grade G-10	0.063	20/20	10	U	U
Epon 901	Shell Chemical Company	5432	11 parts curing agent B-3 to 100 parts resin Cured 1/2 hour at 240°F, then 1-1/2 hours at 350°F		0.050	27/40 10/40 4/20 5/20 2/20 0/20	10 8 6 4 2 1	U - - - - -	U - - - - -
Eimac 221	Eitel-McCullough, Incorporated	7587	Parapoly phenyl	Total 6/20	Approx. 0.2	6/20	10	U	U
Estane 5470X-1 Molded at 290°F	Goodyear Corporation	7552		Stainless steel inserts washed with F-33	0.005	13/20 7/20 8/20 2/20 2/20	10 7.62 5.54 3.46 1.39	U - - - -	U - - - -
Estane 5470X-1 Molded at 290°F	Goodyear Corporation	7552		Stainless steel inserts washed with F-33	0.010	12/20 9/20 7/20 2/20 1/20	10 7.62 5.54 3.46 1.39	U - - - -	U - - - -
Estane 5470X-1 Molded at 290°F	Goodyear Corporation	7552		Stainless steel inserts washed with F-33	0.020	6/20 1/20 6/20 3/20 1/20	10 7.62 5.54 3.46 1.39	U - - - -	U - - - -
Estane 5470X-1 Molded at 290°F	Goodyear Corporation	7552		Stainless steel inserts washed with F-33	0.030	8/20 7/20 6/20 4/20 2/20 0/20 0/20	10 7.62 5.54 4.85 4.16 3.46 2.77	U - - - - - -	U - - - - - -
Estane 5470X-1 Molded at 290°F	Goodyear Corporation	7552		Stainless steel inserts washed with F-33	0.040	4/20 2/20 1/20 1/20 0/20 0/20	10 7.62 5.54 4.85 4.16 3.46	U - - - - -	U - - - - -



TABLE IV. PLASTICS, ELASTOMERS, AND ADHESIVES (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/ No. Tests	Energy Level kg/m	Batch or Jar Rating	Material Rating
Estane 5470X-1 Molded at 290° F	Goodyear Corporation	7552		Stainless steel inserts washed with F-33	0.050	4/20	10	U	U
						4/20	7.62	-	-
						1/20	5.54	-	-
						0/20	4.85	-	-
						0/20	4.16	-	-
Estane 5470X-1 Molded at 290° F	Goodyear Corporation	7552		Stainless steel inserts washed with F-33	0.060	0/20	3.46	-	-
						6/20	10	U	U
						2/20	7.62	-	-
						1/20	6.93	-	-
						0/20	6.24	-	-
Estane 5470X-1 Molded at 290° F	Goodyear Corporation	7552		Stainless steel inserts washed with F-33	0.080	0/20	5.54	-	-
						0/20	5.54	-	-
						3/20	10	U	U
						1/20	7.62	-	-
						0/20	5.54	-	-
Ethyl Cellulose		6354	Ethyl cellulose	Stainless steel inserts	0.005	17/20	10	U	U
						9/20	8	-	-
						8/20	6	-	-
						3/20	4	-	-
						0/20	2	-	-
Ethyl Cellulose		6354	Ethyl cellulose	Stainless steel inserts	0.010	19/20	10	U	U
						16/20	8	-	-
						10/20	6	-	-
						6/20	4	-	-
						0/20	2	-	-
Ethyl Cellulose		6354	Ethyl cellulose	Stainless steel inserts	0.020	18/20	10	U	U
						11/20	8	-	-
						12/20	6	-	-
						7/20	4	-	-
						0/20	2	-	-
Ethyl Cellulose		6354	Ethyl cellulose	Stainless steel inserts	0.030	16/20	10	U	U
						14/20	8	-	-
						11/20	6	-	-
						7/20	4	-	-
						3/20	2	-	-
						0/20	1	-	-

TABLE IV. PLASTICS, ELASTOMERS, AND ADHESIVES (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/ No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
Ethyl Cellulose		6354	Ethyl cellulose	Stainless steel inserts	0.050	16/20	10	U	U
						12/20	8	-	-
						7/20	6	-	-
						4/20	4	-	-
						2/20	2	-	-
Ethyl Cellulose		6354	Ethyl celluloses	Stainless steel inserts	0.060	0/20	1	-	-
						14/20	10	U	U
						10/20	8	-	-
						9/20	6	-	-
						3/20	4	-	-
Ethyl Cellulose		6354	Ethyl cellulose	Stainless steel inserts	0.080	0/20	2	-	-
						17/20	10	U	U
						13/20	8	-	-
						9/20	6	-	-
						2/20	4	-	-
Ethylene Propylene Compound E-617-9 Exon-461	Parker Seal Company	9894			0.078	0/20	2	-	-
						7/20	10	U	U
Exon-461	Firestone Plastics Company	7785	Polyvinyl chloride resin		0.080	5/20	10	U	U
						2/20	7/7	-	-
						0/20	7.0	-	-
						0/20	5.6	-	-
Exon-461	Firestone Plastics Company	7813	Polyvinyl chloride resin		0.060	6/20	10	U	U
						5/20	7.7	-	-
						4/20	5.6	-	-
						1/20	4.9	-	-
						0/20	4.2	-	-
Exon-461	Firestone Plastics Company	7806	Polyvinyl chloride resin		0.050	0/20	3.5	-	-
						2/20	10	U	U
						1/20	7.7	-	-
						5/20	5.6	-	-
Exon-461	Firestone Plastics Company	7806	Polyvinyl chloride resin		0.050	3/20	4.9	-	-
						1/20	2.8	-	-
						0/20	2.1	-	-
						0/20	1.4	-	-

TABLE IV. PLASTICS, ELASTOMERS, AND ADHESIVES (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/ No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
Exon-461	Firestone Plastics Company	7799	Polyvinyl chloride resin		0.040	6/20	10	U	U
						5/20	7.7	-	-
						3/20	5.6	-	-
						0/20	2.8	-	-
						0/20	2.1	-	-
						0/20	1.4	-	-
Exon-461	Firestone Plastics Company	7792	Polyvinyl chloride resin		0.030	9/20	10	U	U
						5/20	7.7	-	-
						6/20	5.6	-	-
						2/20	3.5	-	-
						0/20	2.8	-	-
						0/20	2.1	-	-
Exon-461	Firestone Plastics Company	7785	Polyvinyl chloride resin		0.020	10/20	10	U	U
						10/20	7.7	-	-
						7/20	5.6	-	-
						3/20	3.5	-	-
						1/20	2.8	-	-
						0/20	2.1	-	-
Exon-461	Firestone Plastics Company	7784	Polyvinyl chloride resin		0.010	11/20	10	U	U
						8/20	7.7	-	-
						8/20	5.6	-	-
						3/20	3.5	-	-
						2/20	1.4	-	-
						1/20	0.7	-	-
Exon-461	Firestone Plastics Company	4614	PVC		0.032	4/20	10	U	U
Exon-461	Firestone Plastics Company	4615	PVC		0.020	2/20	10	U	U
Exon-461	Firestone Plastics Company	4616	PVC		0.022	2/20	10	U	U
Exon-461	Firestone Plastics Company	4377	PVC		0.088	2/80	10	U	U
Fairprene 85-001	Du Pont	4609	Viton A on 116 glass	Stainless steel inserts used	0.011	5/20	10	U	U
FEP 120	Du Pont	4585	Teflon suspension fluorinated ethylene propylene	Material coated on brass disc; stainless steel inserts used		0/20	10	S	BT

TABLE IV. PLASTICS, ELASTOMERS, AND ADHESIVES (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/ No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
Fibrous Glass Tubing	Taylor Fibre Company	3812	Epoxy-Glass		0.063	2/2 2/2 2/3	10 5 2	U - -	U - -
Fibrous Glass Tubing	Taylor Fibre Company	3810	Epoxy-Glass		0.063	2/2 2/2 2/3	10 5 2	U - -	U - -
Fiberglass Epoxy Pipe	Test Laboratory	8770			0.22	20/20	10	U	U
Fiberglass Plus A Fluoro-silicone Coating		7177	Glass, coated with fluorinated vinyl resin	Stainless steel inserts	0.012	20/20	10	U	U
Fiberglass Thread	Corning Glass	7180	Glass with parafin wax lubricant	Stainless steel inserts	0.033	20/20	10	U	U
Fluoroflex-T Extruded Hose	Resistoflex Corporation	6957	Teflon with 0.05% carbon black		0.050	0/20	10	S	BT
Fluoroglass E-775-303	John L. Dore Company	4376	Teflon and ground glass			0/20	10	S	S
Flaymbar 477	Ocean Chemical, Incorporated	9842			0.010	14/20	10	U	U
Fluoro-Ray Ceramic Filled TFE, Batches 101, 102, and 103	Raybestos-Manhattan Company	9775	Ceramic Filled TFE		0.025	2-4/20	10	U	BT
Fluoro-Brown	John L. Dore Company	1393	Reprocessed Teflon		0.063	0/20	10	S	BT
Fluorel Elastomer O-Ring, Size 006	Seal Eastern Company	10239				0/20	10	S	BT
Fluorel Elastomer O-Ring, Size 016	Seal Eastern Company	10240				4/20	10	U	BT
Fluorel Elastomer O-Ring, Size 160	Seal Eastern Company	10241				4/20	10	U	BT
Fluorosilicone LS-53-24-300	Dow Corning Corporation	9957	Fluorosilicone		0.070	7/20	10	U	U

TABLE IV. PLASTICS, ELASTOMERS, AND ADHESIVES (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch.)	No. Reactions/ No. Tests	Energy Level Kg./m	Batch or Jar Rating	Material Rating
Fluorel KX2141	Minnesota Mining and Manufacturing Company	2262			0.094	0/20	10	S	U
Fluorel-Elastomer (orange, brown, black, white)	Minnesota Mining and Manufacturing Company	1318 1067	Chlorofluoro-carbon	Five batches tested	0.063	0/20	10	S	U
Fluorolin Tape 101	Joclin Manufacturing	773	3 mil Teflon and 3 mil adhesive			2/3 2/17	10 5	U	U
Fluorolin Tape 303	Joclin Manufacturing Company	770	6 mil Teflon impregnated glass fibers and 4 mil adhesive			2/2 2/6 0/12	10 5 2	U	U
Fluorolin Tape	Joclin Manufacturing company	771	3 mil aluminum foil 4 mil Teflon, 2 mil adhesive			2/3 0/2 2/4	10 5 2	U	U
FM 1000 Adhesive	Bloomington Rubber Company	4057	Nylon Epoxy	Violent reactions	0.010	17/20 11/20 9/20	10 5 2	U	U
Carlock 8573, Lot 65, AME-8N	Aerospace Mechanical Equipment, Incorporated	8600	Filled Teflon		0.105	0/20	10	S	BT
Carlock 8573	Carlock Packing Company	7943	Filled Teflon		0.097	0/20	10	S	BT
Carlock 8573	Carlock Packing Company	9155	Filled Teflon		0.117	0/20	10	S	BT
G.E. Formulation II	General Electric Company	3863	Potting compound of Adiprene L - 100 parts Castor oil - 10 parts Teflon 7X - 100 parts Quadrol - 5.7 parts	Sample B	0.028	2/2 2/8 2/9 2/10 0/20	10 5 3 2 1	U	U
G.E. Formulation II	General Electric Company	2052		Sample C	0.034	2/5 0/20	10 5	U	U
G.E. Formulation II	General Electric Company	3866		Sample D	0.043	6/20 2/8 0/20	10 5 1	U	U

TABLE IV. PLASTICS, ELASTOMERS, AND ADHESIVES (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/ No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
G.E. Formulation II	General Electric Company	2951		Sample E	0.063	0/20	10	I	U
G.E. Formulation II	General Electric Company	2955		Sample F	0.070	0/20	10	I	U
G.E. Formulation II	General Electric Company	3869		Sample F aged 1 year	0.070	2/4 2/4 0/20	10 7 5	U - -	U - -
G.E. Formulation II	General Electric Company	3871	Potting compound of Adeprene L - 100 parts Castor oil - 10 parts Teflon 7X - 100 parts Quadrol - 5.7 parts	Sample G	0.105	2/20 0/20	10 8	U -	U -
G.E. Formulation II	General Electric Company	2743		Sample H	0.125	0/20	10	I	U
G.E. Formulation I	General Electric Company	2945	Potting compound of Adeprene L - 100 parts Castor oil - 10 parts Quadrol - 5.7 parts		0.063	2/11 1/3 0/11 3/0 0/20	10 5 3 10 5	U - - - -	U - - - -
G.E. Formulation III	General Electric Company	2954	Potting compound of Adeprene L - 100 parts Castor oil - 10 parts Quadrol - 4.5 parts Fluorolube - 30 parts		0.152	0/20	10	S	U
G.E. Formulation IIIA	General Electric Company	3040	Same as above except Fluorolube increased to 45 parts		0.063	6/20 2/7 0/20	10 5 3	U - -	U - -
G.E. Formulation IIIA	General Electric Company	3041	Same as above except Fluorolube increased to 45 parts		0.032	10/20 2/4 0/20	10 5 3	U - -	U - -
Gen-Flex Plastic Tubing No. 603	General Cements Company	1678				2/4 2/2 1/14	10 5 2	U - -	U - -
Glid Air	Glidden Company	1900			0.063	5/8 1/1 1/1 1/1	10 5 2 1	U - - -	U - - -

TABLE IV. PLASTICS, ELASTOMERS, AND ADHESIVES (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/ No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
Glass Lacing Tape No. 075127B476	Dodge Fiber Corporation	6068	Glass with Teflon coat	Stainless steel inserts	0.010	1/60	10	S	BT
Glass and Ceramic Adhesive	Dow Corning Corporation	9831	Silicone base	Cured for 24 hours at room temperature	0.050	9/20	10	U	U
Glass Resin 100	Illinois Glass Company	10040			0.050	20/20	10	U	U
Gylon S-50-S	Garlock Packing Company	10265	Filled Teflon		0.100	0/20	10	S	BT
Gylon	Garlock Packing Company	8718	Filled Teflon		0.095	0/20	10	S	BT
GR266, 2H/2 FEP	Du Pont	5566		Code 10-63-13	0.002	0/20	10	S	BT
Gudebrade Style 256 (Lacing Tape)	Gudebrade Silk Company	7075 6391	Teflon TFE	As received	0.010	1/60	10	S	BT
Halon TFE, Batch 3-41-3	Allied Chemical Corporation	7466 7467			0.066 0.070	0/20 0/20	10 10	S S	BT BT
Heat Shrink LS-53	Dow Corning Corporation	5925 5924 5923			0.050 0.063 9.125	20/20 17/20 9/20	10 10 10	U U U	U U U
H Cement	W. T. Bean	5440		H cement applied to stainless steel inserts over dried at 140° F for 15 minutes; then at 600° F for 30 minutes	0.010	0/20	10	S	BT
H-Film 295-1A-3	Du Pont	5191			0.001	11/20 11/20 4/20 0/20	10 8 7 6	U — — —	BT — — —
H-Film 147-2A-2	Du Pont	5193			0.003	4/20 5/20 2/20 0/20	10 8 6 4	U — — —	BT — — —
H-Film 380-2-2	Du Pont	5568		Aged 24 hours at 300° C	0.002	0/20	10	S	BT

TABLE IV. PLASTICS, ELASTOMERS, AND ADHESIVES (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/ No. Tests	Energy Level kg/m	Batch or Jar Rating	Material Rating
H-Film 380-2-2	Du Pont	5567		No extra drying	0.002	4/20	10	U	BT
H-Film 227-1A-1	Du Pont	5195			0.005	4/20 8/20 0/20 0/20	10 8 7 6	U - - - -	BT - - - -
H-Film	Custom Component Switches, Incorporated	6642			0.001	0/20	10	S	BT
Hercocel A	Hercules Powder Company	7729			0.080	2/20 3/20 3/20 0/20 0/20	10 7.7 7.0 6.3 5.6	U - - - -	U - - - -
Hercocel A	Hercules Powder Company	7734			0.060	3/20 2/20 2/20 0/20 0/20	10 7.7 5.6 4.9 4.2	U - - - -	U - - - -
Hercocel A	Hercules Powder Company	7739			0.050	4/20 3/20 2/20 2/20 0/20 0/20	10 7.7 5.6 4.9 4.2 3.5	U - - - - -	U - - - -
Hercocel A	Hercules Powder Company	7746			0.040	4/20 4/20 1/20 1/20 0/20 0/20	10 7.7 5.6 4.2 3.5 2.8	U - - - - -	U - - - -
Hercocel A	Hercules Powder Company	7752			0.030	5/20 6/20 2/20 2/20 0/20 0/20	10 7.7 5.6 4.9 4.2 3.5	U - - - -	U - - -



TABLE IV. PLASTICS, ELASTOMERS, AND ADHESIVES (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/ No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
Hercocel A	Hercules Powder Company	7758			0.020	10/20	10	U	U
						9/20	7.7	-	-
						8/20	5.6	-	-
						3/20	3.5	-	-
						0/20	2.8	-	-
Hercocel A	Hercules Powder Company	7765			0.010	0/20	2.1	-	-
						10/20	10	U	U
						6/20	7.7	-	-
						6/20	5.6	-	-
						2/20	4.9	-	-
Hercocel A	Hercules Powder Company	7772			0.005	0/20	4.2	-	-
						0/20	3.5	-	-
						8/20	10	U	U
						7/20	7.7	-	-
						6/20	5.6	-	-
Hinac G1-FS Coating	Pennsalt Company	6006		Applied by Boeing, Wichita		2/20	3.5	-	-
						2/20	2.8	-	-
						0/20	1.4	-	-
						3/40	10	U	U
						15/20	10	U	U
HIT-3 High Temperature Sealant	Organocerams Inc.	7202		Threshold	0.012	5/20	10	U	U
						2/20	7.62	-	-
						2/20	5.54	-	-
						2/20	4.85	-	-
						0/20	4.16	-	-
HIT-5 High Temperature Sealant	Organocerams Inc.	7196			0.050	0/20	3.46	-	-
						2/20	10	U	U
						1/20	7.62	-	-
						0/20	6.93	-	-
						0/20	6.24	-	-
HIT-424 Adhesive	E. I. du Pont de Nemours and Company, Incorporated	4220	Epoxy phenolic	Violent reactions	0.013	20/20	10	U	U
						20/20	5	-	-
						20/20	3	-	-
						6/20	1	-	-

TABLE IV. PLASTICS, ELASTOMERS, AND ADHESIVES (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/ No. Tests	Energy Level kg/m	Batch or Jar Rating	Material Rating
Hypalon Rubber	E. I. du Pont de Nemours and Company, Incorporated	1958			0.094	2/3 2/5 2/6 1/8	10 5 3 2	U - - -	U - - -
Hypalon-Asbestos	E. I. du Pont de Nemours and Company, Incorporated	1959			0.063	2/10 1/10	10 5	U -	U -
Hypalon Rubber	E. I. du Pont de Nemours and Company, Incorporated	1946			0.094	2/2 2/4 2/7 0/7	10 5 3 2	U - - -	U - - -
Hysol Cement 6020	Houghton Labs Incorporated	1003	Epoxy Cement	Violent reactions	0.050	2/3 2/2 2/4	10 5 2	U U -	U U -
Kel-F (Plasticized)	Minnesota Mining and Manufacturing Company	3320	Polytrifluorochloroethylene		0.032	0/20	10	S	BT
Kel-F (Unplasticized)	Minnesota Mining and Manufacturing Company	822	Polytrifluorochloroethylene			0/20	10	S	BT
Kel-F Plastics, Unplasticized	Minnesota Mining and Manufacturing Company	7648			0.075	0/20	10	S	BT
Kel-F (Sheet) Cadillac Plastic Lot No. A30994	Cadillac Plastic Company	6071			0.63	0/20	10	S	BT
Kel-F AMS3650 Part No. 20M30252		6072		Stainless steel inserts	0.042	0/20	10	S	BT
Kel-F FX-703	Minnesota Mining and Manufacturing Company	7978	Fluorochemical lacquer	Baked on stainless steel inserts at 250°C for 2 hours	0.002	0/20	10	S	BT
Kel-F L-1380	Minnesota Mining and Manufacturing Company	3999	Polytrifluorochloroethylene		0.005	0/20	10	S	BT
Kel-F L-1381	Minnesota Mining and Manufacturing Company	4006	Polytrifluorochloroethylene		0.005	0/20	10	S	BT

TABLE IV. PLASTICS, ELASTOMERS, AND ADHESIVES (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/ No. Tests	Energy Level kg/m	Batch or Jar Rating	Material Rating
Kel-F Film Type 8105	Minnesota Mining and Manufacturing Company	4003	Polytrifluorochloroethylene		0.005	0/20	10	S	BT
Kel-F Film Type KX202	Minnesota Mining and Manufacturing Company	4000	Polytrifluorochloroethylene		0.002	0/20	10	S	BT
Kel-F Film Type KX8110	Minnesota Mining and Manufacturing Company	4004	Polytrifluorochloroethylene		0.010	0/20	10	S	BT
Kel-F Film Type 8210	Minnesota Mining and Manufacturing Company	4002	Polytrifluorochloroethylene		0.010	0/20	10	S	BT
Kel-F Film Type 8205	Minnesota Mining and Manufacturing Company	4001	Polytrifluorochloroethylene		0.005	0/20	10	S	BT
Kel-F81 Plastic	Minnesota Mining and Manufacturing Company	3045	Polymer based on chlorotrifluoro carbon		0.063	0/20	10	S	BT
Kel-F800 (Pressurized can)	Sprayon Products, Incorporated	2601		Sprayed on stainless steel inserts. Dried 72 hours		2/60	10	U	BT
Kel-F 800 Spray	Sprayon Products, Incorporated	7979	Chlorofluorocarbon	Baked on stainless steel inserts at 250° C for 2 hours	0.002	0/20	10	S	BT
Kel-F 800 Spray	Sprayon Products, Incorporated	5713		Stainless steel inserts Spray-coated, aged 17 days		0/20	10	S	BT
Kel-F800 Resin	Minnesota Mining and Manufacturing Company	1421	Polytrifluorochloroethylene		0.063	0/20	10	S	BT
Kel-F800 Plastic	Minnesota Mining and Manufacturing Company	3060	Polytrifluorochloroethylene		0.063	0/20	10	S	BT
Kel-F800 Plastic	Minnesota Mining and Manufacturing Company	3319	Polytrifluorochloroethylene	Soaked in petroleum ether and dried	0.125	6/20	10	U	BT
Kel-F-800 Hot Melt Primer and Kel-F-800 Impregnated Glass Cloth	Hughes Aircraft Company	4474			0.063	3/4 0/16	10 5	U	U

TABLE IV. PLASTICS, ELASTOMERS, AND ADHESIVES (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/ No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
Kel-F Hot Melt Primer and Polyurethane Impregnated Glass Cloth	Hughes Aircraft Company	4475			0.063	2/2 2/2 2/2 0/14	10 5 3 1	U — — —	U — — —
Kel-F-800 Hot Melt Primer	Hughes Aircraft Company	4374		Stainless steel inserts used	0.063	2/7 1/2 1/3 0/8	10 5 3 1	U — — —	U — — —
Kel-F Primer 640 Top Coat L-1431 (KX636)	Minnesota Mining and Manufacturing Company	4809		Sprayed on stainless steel inserts		0/20	10	S	S
KX640 Primer KX635 Top Coat	Minnesota Mining and Manufacturing Company	4808		Sprayed on stainless steel inserts		0/20	10	S	S
Kel-F-PN25 Primer	Minnesota Mining and Manufacturing Company	1676		One coat sprayed on stainless steel inserts		0/20	10	S	S
Kel-F PN25 Primer and NW-25TN Coating	Minnesota Mining and Manufacturing Company	1675		Two coats sprayed on stainless steel inserts		0/20	10	S	S
Kel-F Dispersion 625	Minnesota Mining and Manufacturing Company	3518	Polytrifluorochloroethylene	Film	0.005	0/20	10	S	S
Kel-F Dispersion KX633	Minnesota Mining and Manufacturing Company	4005	Polytrifluorochloroethylene	Film	0.003	0/20	10	S	S
Kel-F Elastomer	Minnesota Mining and Manufacturing Company	3852	Polytrifluorochloroethylene		0.125	0/20	10	S	S
Kel-F Elastomer	Minnesota Mining and Manufacturing Company	3853	Polytrifluorochloroethylene		0.063	0/20	10	S	S
Koroseal	B.F. Goodrich Company	4286	Vinyl rubber		0.125	2/20	10	U	U
Krylon Crystal Clear Spray Coating	Krylon Incorporated	3226	Acrylic resin and aromatic hydrocarbons		0.002	2/3 2/6	10 5	U —	U —
Kynar (RC-2525)	Pennsalt Chemical Company	2874	Vinylidene Fluoride		0.063	0/20 0/10	1 10	— —	— —
Kynar	The Fluorocarbon Company	5364	Vinylidene fluoride		0.016	5/20 2/20	10 8	U —	U —

TABLE IV. PLASTICS, ELASTOMERS, AND ADHESIVES (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/ No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
Kynar (Lot 6210-9E; Annealed)	The Fluorocarbon Company	5364	Vinylethane fluoride		0.016	5/20 2/20 2/20	10 8 6	U - -	U
Kynar (Lot 6210-9E; Annealed)	The Fluorocarbon Company	5367	Vinylethane fluoride		0.032	4/20 11/40	11.3 10	U -	U
Kynar (Lot 6210-9E; Annealed)	The Fluorocarbon Company	5370	Vinylethane fluoride		0.063	2/20	10	U	U
Kynar (Lot 6210-9E; Annealed)	The Fluorocarbon Company	5361	Vinylethane fluoride		0.025	2/20 1/20 1/20	10 8 6	U - -	U
Kynar (Lot 6210-9E)	The Fluorocarbon Company	4839	Vinylethane fluoride		0.063	1/60	10	S	U
Kynar	Connecticut Hard Rubber Company	4824	Vinylethane fluoride		0.025	21/40	10	U	U
Kynar	Connecticut Hard Rubber Company	4834	Vinylethane fluoride		0.025	18/20	10	U	U
Kynar	Connecticut Hard Rubber Company	4836	Vinylethane fluoride		0.002	20/20	10	U	U
Kynar	Connecticut Hard Rubber Company	4835	Vinylethane fluoride		0.002	20/20	10	U	U
Lamicaid	Minnesota Mining and Manufacturing Company	3169	Teflon glass cloth		0.125	0/20	10	S	S
Leikoweld 109 Adhesive	Leffingwell Chemical Company	10012	Adhesive-activator ratio 1 to 1	Cured 2-1/2 hours at 150°F	0.050	18/20	10	U	U
Leno Weave (Sample No. 1)	Connecticut Hard Rubber Company	5356	Polytetrafluoroethylene fabric impregnated with Kynar		0.015	4/20 3/20 3/20 3/20 0/20	10 8 6 4 2	U - - - -	BT
Leno Weave (Sample No. 2)	Connecticut Hard Rubber Company	4811	Polytetrafluoroethylene fabric impregnated with Kynar		0.015	0/20	10	I	BT

TABLE IV. PLASTICS, ELASTOMERS, AND ADHESIVES (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/ No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
Leno Weave (Sample No. 3)	Connecticut Hard Rubber Company	4832	Polytetrafluoroethylene fabric impregnated with Kynar		0.015	1/20	10	I	BT
Leno Weave (Sample No. 4)	Connecticut Hard Rubber Company	4826	Polytetrafluoroethylene fabric impregnated with Kynar		0.015	0/20	10	S	BT
Lexan Polycarbonate Resin	General Electric Company	2730	Polycarbonate resin		0.063	20/20 16/20 0/20 3/17	10 5 2 4	U	U
Liquid Envelope, Aluminum Cold Spray	Better Finishing and Coating Company	3854			0.050	2/2 2/2 2/8 0/20	10 5 2 1	U	U
Liquid Envelope, Aluminum Cold Spray 675-291-A	Better Finishing and Coating Company	3858			0.050	2/2 2/2 2/4 2/10	10 5 2 1	U	U
Liquid Envelope, Coverlax S.C. 224	Better Finishing and Coating Company	3856		Dip coating on stainless steel inserts		3/20 2/14 0/20	10 5 3	U	U
LS-53	Dow Corning Corporation	5330	Fluorosilicone elastomer		0.070	4/20 6/20 3/20 8/20	10 8 6 4	U	U
LS-53	Dow Corning Corporation	5334	Fluorosilicone elastomer		0.035	11/20 10/20 6/20 4/20 5/20 0/20	10 8 6 4 2 1	U	U

TABLE IV. PLASTICS, ELASTOMERS, AND ADHESIVES (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/ No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
LS-53	Dow Corning Corporation	5340	Fluorosilicone elastomer		0.016	16/20 13/20 9/20 10/20 6/20 2/20	10 8 6 4 2 1	U - - - - -	U - - - - -
O-Rings, Sample No. 6071	Nichols Engineering Company	5732	Dow Corning LS-53 Modified with Teflon		0.131	17/20	10	U	U
LS-63	Dow Corning Corporation	6047		Washed with F-33 Alkaline cleaner, heat treated at 180°C for 5 hours and at 115°C for 48 hours (stainless steel inserts)	0.055	6/20 2/20	10 8	U -	U -
LS-63, Lot 129	Dow Corning Corporation	5935			0.050	4/20	10	U	U
LS-63, Lot 129	Dow Corning Corporation	5934			0.063	12/20	10	U	U
LS-63, Lot 129	Dow Corning Corporation	5933			0.125	3/20	10	U	U
LS-70	Dow Corning Corporation	5315	Fluorosilicone rubber		0.070	2/20 8/20 4/20 0/20	10 8 6 4	U - - -	U - - -
LS-70	Dow Corning Corporation	5319	Fluorosilicone rubber		0.035	4/20 6/20 3/20 8/20 7/20 7/20	10 8 6 4 2 1	U - - - - -	U - - - - -
LS-70	Dow Corning Corporation	5325	Fluorosilicone rubber		0.016	16/20 15/20 8/20 11/20 4/20	10 8 6 4 2	U - - - -	U - - - -
LS-2249, Lot 130	Dow Corning Corporation	5937			0.050	19/20	10	U	U

TABLE IV. PLASTICS, ELASTOMERS, AND ADHESIVES (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/ No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
LS-2249, Lot 130	Dow Corning Corporation	5936			0.063	14/20	10	U	U
LS-2249, Lot 130	Dow Corning Corporation	5938			0.125	6/20	10	U	U
M.L. Enamel	E. I. du Pont de Nemours and Company, Incorporated	5428	A polyimide from a pyrolytic anhydride		0.005	3/20	10	U	BT
Micarta	Westinghouse Electric Corporation	5490	Tested in cell II		0.063	15/20 16/20 7/20 4/20	10 8 6 4	U - - -	U - - -
Micarta	Westinghouse Electric Corporation	2530	Phenolic laminate, fabric base		0.063	16/20 16/20 6/20 0/20	10 5 2 1	U - - -	U - - -
Mox-Tuff Cryogenic Material	Moxness Products, Incorporated	6362		Stainless steel inserts	0.097	10/20	10	U	U
Mylar (from Polyester Powder)		6380	Polyester			17/20	10	U	U
Mylar (Doped with 10% FEP and 90% PET)		6381	Polyester		0.08	7/20	10	U	U
Mylar A	E. I. du Pont de Nemours & Company, Incorporated	6166	Polyester	Stainless steel inserts Vacuum exposed at 250°F		2/20 5/20 3/20 1/20 0/20	10 8 6 4 2	U - - - -	U - - - -
Mylar A	E. I. du Pont de Nemours & Company, Incorporated	6669	Polyester	Stainless steel inserts Cleaned with Trike	0.003	4/20 1/20 1/20 1/20 0/20	10 7.62 5.54 4.16 3.46	U - - - -	U - - - -
Mylar A	E. I. du Pont de Nemours & Company, Incorporated	6691	Polyester	No stainless steel inserts used, cleaned with Trike	0.003	4/20 1/20 1/40 1/40 0/20	10 7.62 6.93 6.24 5.54	U	U



TABLE IV. PLASTICS, ELASTOMERS, AND ADHESIVES (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/ No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
Mylar A	E.I. du Pont de Nemours & Company, Incorporated	6680	Polyester	Stainless steel inserts cleaned with Trike	0.005	11/20 7/20 5/20 2/20 1/20	10 7.62 5.54 3.46 2.08	U	U
Mylar A	E.I. du Pont de Nemours & Company, Incorporated	6704	Polyester	Stainless steel cups	0.005	50/100 44/100 34/100 10/100 3/80 0/20	10 8 6 4 2 2	U	U
Mylar A	E.I. du Pont de Nemours & Company, Incorporated	6562 6700	Polyester	No stainless steel inserts, cleaned with Trike	0.005	5/20 5/20 2/20 1/20 2/20 0/20 1/20	10 7.62 5.54 4.16 3.46 3.46 2.08	U	U
Mylar A	E.I. du Pont de Nemours & Company, Incorporated	6522 6742	Polyester	Stainless steel inserts	0.005	50/100 41/100 22/100 12/100 3/100	10 8 6 4 2	U	U
Mylar A	E.I. du Pont de Nemours & Company, Incorporated	6716	Polyester	No stainless steel inserts	0.005	2/120	10		
Mylar A	E.I. du Pont de Nemours & Company, Incorporated	6148	Polyester	Stainless steel inserts	0.006	15/20 6/20 7/20 4/20 4/20 0/20	16 14 12 10 8 6	U	U
Mylar A	E.I. du Pont de Nemours & Company, Incorporated	6675	Polyester	Stainless steel inserts cleaned with Trike	0.0075	14/20 10/20 14/20 6/20 4/20	10 7.62 5.54 3.46 2.08	U	U

TABLE IV. PLASTICS, ELASTOMERS, AND ADHESIVES (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/ No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
Mylar A	E.I. du Pont de Nemours & Company, Incorporated	6565	Polyester	No stainless steel inserts, cleaned with Trike	0.0075	2/20	10	U	U
						5/20	7.62		
						1/20	6.93		
						1/40	6.24		
						1/40	5.54		
Mylar A	E.I. du Pont de Nemours & Company, Incorporated	6686	Polyester	Stainless steel inserts cleaned with Trike	0.010	1/20	3.46		
						1/40	2.77		
						18/20	10	U	U
						14/20	7.62		
						14/20	5.54		
Mylar A	E.I. du Pont de Nemours & Company, Incorporated	6575	Polyester	No stainless steel inserts, cleaned with Trike	0.010	11/20	3.46		
						4/20	2.08		
						7/20	10	U	U
						7/20	7.62		
						2/20	6.93		
Mylar D	E.I. du Pont de Nemours & Company, Incorporated	6405			0.003	2/20	6.24		
						2/40	5.54		
						1/20	4.85		
						1/60	4.16		
						0/40	3.46		
Mylar D	E.I. du Pont de Nemours & Company, Incorporated	6588		No stainless steel inserts, cleaned with Trike	0.003	2/20	10	U	U
						1/20	8		
						5/20	10	U	U
						4/20	7.62		
						1/20	6.93		
Mylar D	E.I. du Pont de Nemours & Company, Incorporated	6407		Stainless steel inserts	0.005	1/20	6.24		
						0/60	5.54		
						2/20	10	U	U
						2/20	8		
						2/20	6		
						1/20	4		
						0/20	2		

TABLE IV. PLASTICS, ELASTOMERS, AND ADHESIVES (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/ No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
Mylar D	E. I. du Pont de Nemours and Company, Incorporated	6595		No stainless steel inserts, cleaned with Trike	0.005	3/20	10	U	U
						2/20	7.85	-	-
						1/20	6.93	-	-
						2/20	6.24	-	-
						2/60	5.54	-	-
						1/20	3.46	-	-
						1/60	2.77	-	-
						0/20	2.08	-	-
						9/20	10	U	U
						11/20	8	-	-
Mylar D	E. I. du Pont de Nemours and Company, Incorporated	6412		Stainless steel inserts	0.0075	7/20	6	-	-
						6/20	4	-	-
						2/20	2	-	-
						0/20	1	-	-
						3/20	10	U	U
Mylar D	E. I. du Pont de Nemours and Company, Incorporated	6392 6607		No stainless steel inserts, cleaned with Trike	0.0075	1/20	7.62	-	-
						2/20	5.54	-	-
						1/20	5.54	-	-
						1/20	4.85	-	-
						0/60	3.46	-	-
Mylar D	E. I. du Pont de Nemours and Company, Incorporated	6418			0.010	14/20	10	U	U
						11/20	8	-	-
						11/20	6	-	-
						9/20	4	-	-
						2/20	2	-	-
Mylar D	E. I. du Pont de Nemours and Company, Incorporated	6398		No stainless steel inserts, cleaned with Trike	0.010	0/20	1	-	-
						10/20	10	U	U
						8/20	7.62	-	-
						6/20	5.54	-	-
						1/20	3.46	-	-
Mylar R22 Plastic Film	E. I. du Pont de Nemours and Company, Incorporated	722	Polyester film			2/20	2.08	-	-
						0/20	1.39	-	-
Mylar Film	E. I. du Pont de Nemours and Company, Incorporated	4545	Polyester film		0.001	2/20	10	U	U
						4/20	10	U	U

TABLE IV. PLASTICS, ELASTOMERS, AND ADHESIVES (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/ No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
Mylar Film	E. I. du Pont de Nemours and Company, Incorporated	3414	Vapor coated with aluminum on both sides 400 Å thick		0.002	4/20 3/20 0/20	10 5 3	U - -	U - -
Mylar Film	E. I. du Pont de Nemours and Company, Incorporated	3444	Vapor coated on one side with 200Å aluminum 400 Å aluminum on other side		0.006	5/20 5/20 0/20	10 5 3	U - -	U - -
Mylar Film	E. I. du Pont de Nemours and Company, Incorporated	3409	Vapor coated with 400 Å aluminum on one side		0.002	2/25 0/20 2/20	10 5 6	U - -	U - -
Mylar Film	E. I. du Pont de Nemours and Company, Incorporated	3442	Vapor coated with 400 Å aluminum on one side		0.006	2/23 0/20	10 5	U - -	U - -
Mylar, Aluminized	B. F. Goodrich Company	3397	Aluminized Mylar reinforced with No. 477 vedine adhesive between filaments			1/1 1/1 1/5	10 5 3	U - -	U - -
Mylar, Aluminized	B. F. Goodrich Company	3398	Aluminized Mylar reinforced with No. 476 Vedine adhesive between filaments			1/1 1/1 1/1 0/6	10 5 2 1	U - -	U - -
Mylar, Aluminized	B. F. Goodrich Company	3399	Aluminized Mylar reinforced with No. 52042			1/1 1/6 1/1	10 3 2	U - -	U - -
Mylar, Aluminized	B. F. Goodrich Company	3396	Aluminized Mylar reinforced with No. 15345			1/1 1/1 1/2 0/1	10 5 2 1	U - -	U - -
Mylar, Aluminized	B. F. Goodrich Company	3395	Aluminized Mylar reinforced with No. 15094			2/2 1/1 1/2 0/3	10 5 2 1	U - -	U - -
Mylar, Aluminized	B. F. Goodrich Company	3394	Aluminized Mylar reinforced with No. 482			2/2 2/3 1/4	10 5 3	U - -	U - -

TABLE IV. PLASTICS, ELASTOMERS, AND ADHESIVES (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/ No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
Mylar		3493	1-1/2 mil Mylar between two pieces of 0.0035 aluminum polyester adhesive	Three batches tested		2/8 2/9 1/3 0/20	10 5 3 2	U - - -	U - - -
Mystik Foil No. 7402 Tape	Mystik Adhesive Products Company	835 426	Aluminum, silicone adhesive			2/3 2/3 1/14	10 5 2	U - -	U - -
Mystik Foil No. 7402 Tape	Mystik Adhesive Products		Aluminum, silicone adhesive	Baked 100° F overnight and stripped		0/20	10	S	U
Mystik Foil No. 7402 Tape	Mystik Adhesive Products		Aluminum, silicone adhesive	Aged 1 week and stripped		1/20	10	I	U
Narmco Experimental Adhesive No. 1	Narmco Research and Development Company	4082	Chlorinated polyester cured with 2% MEK, peroxide and cobalt naphthenate		0.050	7/10 4/10 2/20 0/20	10 5 3 2	U - - -	U - - -
Narmco Experimental Adhesive No. 2	Narmco Research and Development Company	4085	Chlorinated polyester with 33.3% antimony trichloride, cured with 2.0% MEK, peroxide and cobalt naphthenate		0.050	9/10 2/5 1/10 2/10 0/20	10 5 3 2 1	U - - - -	U - - - -
Narmco Experimental Adhesive No. 3	Narmco Research and Development Company	4088	ERL 0625 epoxy cured with 10.6 phr meta-phenylene diamine		0.050	7/10 2/10 0/20	10 5 3	U - -	U - -
Narmco Experimental Adhesive No. 4	Narmco Research and Development Company	4090	ERL 0625 epoxy, cured with 14.5 phr chlorendic anhydride and 0.5% benzyltrimethylamine		0.050	6/10 6/20 2/10 1/10 0/20	10 5 3 2 4	U - - - -	U - - - -
Narmco Resin 3135	Narmco Research and Development Company	3624	Aluminum alloy 7075-T6 cross laminated with layers of adhesive, two pieces of 1 mil FEP Type 544 between aluminum		0.050	2/20 3/20 2/20	10 5 1	U - -	U - -

TABLE IV. PLASTICS, ELASTOMERS, AND ADHESIVES (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/No. Tests	Energy Level kg/m	Batch or Jar Rating	Material Rating
Narmco Resin 3135	Narmco Research and Development Company	3512	Adhesive consisting of 50% epoxy and 50% polyamide		0.050	3/3 2/2 2/7 0/12	10 5 2 1	U - - -	U - - -
Narmco Metlbond 3170	Narmco Research and Development Company	3508	Adhesive consisting of 50% filled epoxy, 50% filled polyamine		0.050	16/24 2/8 2/14 0/20	10 5 3 1	U - - -	U - - -
Narmco 2-Part Adhesive	Narmco Research and Development Company	3514	Adiprene L-100 polyurethane prepolymer, Moca curing agent		0.050	5/5 3/5 4/5 2/5	10 5 3 1	U - - -	U - - -
Narmco C	Narmco Research and Development Company	5707		0.050" thick in bottom of aluminum cup	0.050	20/20 20/20 20/20 20/20 19/20 14/20	10 8 6 4 2 1	U - - -	U - - -
Narmco 7343	Narmco Research and Development Company	9228		10 pound plummet	0.050	8/20 5/20 0/20	0.5 0.25 0.13	U - - -	U - - -
Narmco 7343	Narmco Research and Development Company	9377		2.2 pound plummet	0.050	10/20 2/29 0/20	1 0.25 0.13	U - - -	U - - -
Potting Compound Narmco 7343	Whittaker Corporation, Division of Telecomputing Corporation	5666 6002			0.030 0.030	2/20 8/20	10 10	U - - -	U - - -
Neoprene Rubber	Non-Metallics Materials Branch	9353			0.040	16/29 10/20 8/20 2/20 2/20 0/20 0/20	10 7.7 5.6 4.9 4.2 3.5 2.8	U - - -	U - - -
Neoprene Rubber A-522	Non-Metallics Materials Branch	6081			0.065	3/20 3/20 0/20	10 8 6	U - - -	U - - -
Nitroso Copolymer	Thiokol, Reaction Motors Division	7563			0.19	0/12	10	U - - -	U - - -

TABLE IV. PLASTICS, ELASTOMERS, AND ADHESIVES (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/ No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
Nitroso Vulcanizate	Thiokol Reaction Motors Division	7562			0.080	1/6	10	I	I
Nitroso Terepolymer Vulcanizate	Thiokol Chemical Company	8980			0.036	2/20	10	I	I
Non-metallic Inserts (MSFC Stock No. 127-912-4200)		4285			0.063	2/2	10	U	U
						2/6	5	-	-
						2/12	3	-	-
Nylon Hooks		9227			0.035	4/4	10	U	U
Nylon Basket Weave No. 1803		2250	Polyamide		0.032	2/2	10	U	U
						2/2	5	-	-
						2/2	2	-	-
						2/12	1	-	-
Nylon Type 127-1		3545	Polyamide		0.250	8/20	10	U	U
						1/1	5	-	-
						1/2	3	-	-
						0/20	1	-	-
Nylon "C" Lot 8762	Specialty Converting, Incorporated	4184	Polyamide		0.001	13/20	10	U	U
Nylon, Zytel	E. I. du Pont de Nemours and Company, Incorporated	4180	Polyamide		0.001	10/20	10	U	U
Nylon, Zytel	E. I. du Pont de Nemours and Company, Incorporated	4183	Polyamide		0.002	3/20	10	U	U
Nylon, Zytel	E. I. du Pont de Nemours and Company, Incorporated	4182	Polyamide		0.004	8/20	10	U	U
Nylon Extruded Rod		855			0.063	2/2	10	U	U
						2/2	5	-	-
						2/3	2	-	-
Nylon		6250			0.004	2/40	10	U	U
Nylon and Polyethylene Composite		6254		Stainless steel inserts	0.017	11/20	10	U	U
Nylon and Polyethylene Composite		6252		Stainless steel inserts	0.149	8/20	10	U	U

TABLE IV. PLASTICS, ELASTOMERS, AND ADHESIVES (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/ No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
Nylon and Polyethylene Composite		6257		Stainless steel inserts	0.120	2/20	10	U	U
O-Ring (neoprene)		7015			0.068	20/20	10	U	U
O-Ring	Disgrin Ind. Div of Pellon Corporation	5731		Stainless steel inserts	0.145	15/20	10	U	U
Parco "O" Rings 947-70	Plastics and Rubber Product Company	1430	Viton A		0.063	0/20	10	S	BT
Permadel P421 Tape	Permadel Tape Corporation	1261				1/6 0/2	10 5	U	U
Permafil		3529				7/20 7/20 0/20	10 5 3	U U U	U U U
P.C. No. 925, Teflon MB	Raybestos-Manhattan	7474			0.063	0/20	10	S	BT
Penton Chlorinated Polyethylene	Hercules Powder Company	7442	Chlorinated Polyethylene	Stainless steel inserts	0.005	18/20 16/20 13/20 8/20 3/20	10 7.62 5.54 3.46 1.39	U U U U U	U U U U U
Penton Chlorinated Polyethylene	Hercules Powder Company	7437	Chlorinated Polyethylene	Stainless steel inserts	0.010	18/20 15/20 15/20 9/20 3/20	10 7.62 5.54 3.46 1.39	U U U U U	U U U U U
Penton Chlorinated Polyethylene	Hercules Powder Company	7430	Chlorinated Polyethylene	Stainless steel inserts	0.020	18/20 13/20 7/20 6/20 3/20	10 7.62 5.54 3.46 1.39	U U U U U	U U U U U
Penton Chlorinated Polyethylene	Hercules Powder Company	7427	Chlorinated Polyethylene	Stainless steel inserts	0.030	17/20 15/20 4/20 3/20 1/20	10 7.62 5.54 3.46 1.39	U U U U U	U U U U U



TABLE IV. PLASTICS, ELASTOMERS, AND ADHESIVES (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/ No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
Penton Chlorinated Polyethylene	Hercules Powder Company	7422	Chlorinated Polyethylene	Stainless steel inserts	0.040	13/20 10/20 4/20 2/20 2/20	10 7.62 3.46 3.46 1.39	U - - - -	U - - - -
Penton Chlorinated Polyethylene	Hercules Powder Company	7415	Chlorinated Polyethylene	Stainless steel inserts	0.050	14/20 9/20 5/20 2/20 0/20 0/20 0/20 0/20 11/20	10 7.62 5.54 3.46 2.77 2.08 1.39 7.62 5.54 4.85 4.16 3.46	U - - - - - - - U	U - - - - - - - -
Penton Chlorinated Polyethylene	Hercules Powder Company	7409	Chlorinated Polyethylene	Stainless steel inserts	0.060	5/20 2/20 1/20 0/20 0/20	10 7.62 5.54 4.85 4.16 3.46	U - - - - -	U - - - - -
Penton Chlorinated Polyethylene	Hercules Powder Company	7403	Chlorinated Polyethylene	Stainless steel inserts	0.075	12/20 13/20 6/20 2/20 0/20 0/20	10 7.62 5.54 4.16 3.46 2.77	U - - - - -	U - - - - -
Plaskon 2200 CTFE Caps	Aero-Dynamics, Incorporated	8264	Polytrifluorochloroethylene resin		0.080	2/20	10	U	BT
Plaskon 2400 CTFE	Allied Chemical Corporation	5588	Formerly known as Halon TVS (300) High ZST	Stainless steel inserts Used	0.128	0/20	10	S	BT
Plaskon 2400 CTFE	Allied Chemical Corporation	5590	Formerly known as Halon TVS (300) High ZST	Stainless steel inserts Used	0.058	0/20	10	S	BT
Plaskon Alkyd 440 Sheet Plastic	Burrett Division Allied Chemical Company	1004	Glass and polyester			2/5 2/13 0/2	10 5 1	U - -	U - -
Plastic KF52 (MIL-B-131B Class 2)	Plastic Film Corporation	300		Lot No. 46		1/2 1/4	10 5	U -	U -

TABLE IV. PLASTICS, ELASTOMERS, AND ADHESIVES (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/ No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
Plastic P35A (MIL-B-131B Class I)	Plastic Film Corporation	301		Lot No. 150		1/2 2/2	10 5	U -	U -
Plastic Rod (MIL-P-79B)		857		Electrical insulation		2/2 2/2 1/16	10 5 2	U -	U -
Plastic Plugs		3501	Dyed polyethylene		0.063	4/11 2/10 2/14 0/20	10 5 3 1	U -	U -
Plastic Steel Putty Type A	Devcon Corporation	3390	80% Steel with epoxy binder	Violent reactions	0.050	5/5 5/5 9/12 4/20	10 5 2 1	U -	U -
Plexiglass		558		Three batches tested		2/2 1/3 1/4	19 5 3	U -	U -
Polyken No. 110 Tape						2/2 2/2	10 5	U -	U -
Polyethylene	Kendall Company	1698			0.032	4/7 2/19 1/3 0/17	10 5 2 1	U -	U -
Polyethylene Tubing		2627				2/11 2/10 2/20	10 5 2	U -	U -
Polyethylene		5719		Stainless steel inserts	0.006	16/20 16/20 16/20 8/20 6/20 0/20	10 8 6 4 2 1	U -	U -
Polyethylene	Du Pont	5175		Shore hardness 25	0.005	7/20 10/20 9/20 11/40	10 8 6 4	U -	U -

TABLE IV. PLASTICS, ELASTOMERS, AND ADHESIVES (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
Polyethylene	Du Pont	5141		Shore hardness 52	0.137	3/20 1/20 1/20 0/20	11.3 10 8 6	U - - -	U - - -
Polyethylene	Du Pont	5163		Shore hardness 35	0.020	15/20 16/20 13/20 11/20 7/20 3/20	10 8 6 4 2 1	U - - - - -	U - - - - -
Polyethylene	Du Pont	5157		Shore hardness 40	0.075	4/20 7/20 3/20 6/20 0/20	11.3 10 8 6 4	U - - - -	U - - - -
Polyethylene 1220	Allied Chemical Company	5205		High density	0.063-0.075	7/20 2/20 1/20 2/20 1/20 0/20	10 8 6 4 2 1	U - - - - -	U - - - - -
Polyethylene	Du Pont	5606		Stainless steel insert used	0.006	19/20 18/20 17/20 11/20 11/20 0/20	10 8 6 4 2 1	U - - - - -	U - - - - -
Polyethylene Construction Film		8472			0.006	88/100 50/100 42/100 30/100 9/100 0/100	10 8 6 4 2 1	U - - - - -	U - - - - -
Polypropylene Caps	Aero-Dynamics, Incorporated	8265			0.063	20/20	10	U	U
Polypentenyl Oxide	General Electric Company	8618			0.065	20/20	10	U	U

TABLE IV. PLASTICS, ELASTOMERS, AND ADHESIVES (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
Polypropylene	Non-Metallics Materials Branch	8585			0.080	15/20 12/20 4/20 2/20 0/20 0/20	10 7.7 5.6 4.9 4.2 3.5	U - - - - -	U - - - - -
Polypropylene	Non-Metallics Materials Branch	8578			0.060	17/20 12/20 6/20 3/20 1/20 0/20	10 7.7 5.6 3.5 2.8 1.4	U - - - - -	U - - - - -
Polypropylene	Non-Metallic Materials Branch	8573			0.050	17/20 12/20 8/20 7/20 2/20	10 7.7 5.6 3.5 1.4	U - - - - -	U - - - - -
Polypropylene	Non-Metallic Materials Branch	8568			0.040	18/20 15/20 9/20 7/20 3/20	10 7.7 5.6 3.5 1.4	U - - - - -	U - - - - -
Polypropylene	Non-Metallic Materials Branch	8563			0.030	18/20 17/20 14/20 14/20 8/20	10 7.7 5.6 3.5 1.4	U - - - - -	U - - - - -
Polypropylene	Non-Metallic Materials Branch				0.020	19/20 18/20 15/20 14/20 8/20	10 7.7 5.6 3.5 1.4	U - - - - -	U - - - - -
Polypropylene	Non-Metallic Materials Branch	8552			0.010	18/20 18/20 16/20 12/20 8/20 3/20	10 7.7 5.6 3.5 1.4 0.7	U - - - - -	U - - - - -

TABLE IV. PLASTICS, ELASTOMERS, AND ADHESIVES (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
Polysulfide Compound 380M	Products Research Corporation	8649			0.017	20/20	10	U	U
P-101-S Composite	Snyder Manufacturing Company	8812			0.020	0/20	10	S	I
Polyurethane Wiping Material		2502			0.016	2/3 2/9 0/20	10 3 1	U — —	U — —
Polyvinyl Chloride	Teledyne Corporation	3785			0.125	2/2 2/9 2/14 0/20	10 5 2 1	U — — —	U — — —
Polyvinyl Chloride		4280		Tested in air 11/20 charge noted	0.050				
Polyvinyl Chloride		4279		Tested in air 8/20 charge noted	0.025				
Polyvinyl Chloride		3782		Cotton cloth coated with PVC 0.015 inches per side	0.050	2/2 2/2 2/5 1/20	10 5 3 1	U — — —	U — — —
Polyvinyl Chloride Electrical Insulation	Revere Corporation of America	1692	Polyvinyl chloride		0.063	2/3 2/3 2/11 1/3	10 5 2 3	U — — —	U — — —
Potting Compound	Bendix Corporation	1945	Epoxy		0.063	1/1 1/1 1/1 1/2	10 5 2 1	U — — —	U — — —
Polyvinyl and Butyl-Coated Nylon		6256		Stainless steel inserts	0.005	9/20	10	U	U
Pro-Seal 994, Lot T0306	Coast Pro-Seal Manufacturing Company	9820			0.050	5/20	10	U	U

TABLE IV. PLASTICS, ELASTOMERS, AND ADHESIVES (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/ No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
Pro-Seal 994, Lot L8666	Coast Pro-Seal Manufacturing Company	9825			0.050	6/20	10	U	U
Pro-Seal 994, Sand Mix	Kennedy Space Center	10037			0.100	12/20	10	U	U
Pro-Seal 994, Sand Mix	Kennedy Space Center	9839	Three Parts of 994, one part of graded sand		0.500	11/20	10	U	U
Pro-Seal 994, Expansion Joint Sealant	Coast Pro-Seal Manufacturing Company	3221	Polyurethane		0.050	8/20	10	U	U
Pro-Seal 994	Coast Pro-Seal Manufacturing Company	3221			0.063	7/20 6/20 2/20 0/20	10 5 2 1	U - - -	U - - -
PR-1732 Casting Resin	Product Research Corporation	713				3/3 2/3 2/7	10 5 3	U - -	U - -
PR-1732	Product Research Corporation	9243			0.001	6/20	10	U	U
PR-1540 1 Part A, 2 Parts D	Product Research Corporation	6990			0.050	18/20	10	U	U
PR-1525	Product Research Corporation	2939	Polyurethane		0.063	3/20 0/20	10 5	U -	U -
PR-1525	Product Research Corporation	2932	Polyurethane		0.125	2/20	10	U	U
PR-1527	Product Research Corporation	2937	Polyurethane		0.063	7/20 3/20	10 5	U -	U -
PR-1527	Product Research Corporation	2936	Polyurethane		0.032	11/20	10	U	U
PR-1536	Product Research Corporation	2935	Polyurethane		0.063	10/20	10	U	U
PR-1538-T	Product Research Corporation	2934	Polyurethane		0.063	5/20 1/20	10 5	U -	U -
PR-1732 with Dynathenn-4327 Top Coat	Non-Applied Materials Branch	9714			0.002	2/20	10	U	U

TABLE IV. PLASTICS, ELASTOMERS, AND ADHESIVES (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/ No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
PR-1910	Product Research Corporation	990	Silicone		0.050	2/2 2/2 0/16	10 5 2	U - -	U - -
PR-1902 Primer	Product Research Corporation	2332				2/11 0/9	10 5	U -	U -
PR-1955	Product Research Corporation	3931			0.063	2/4 2/16 2/12 0/20	10 5 3 1	U - - -	U - - -
PR-1955 BT	Product Research Corporation	9379			0.050	18/20 17/20 14/20 9/20 4/20 0/20	10 7.7 5.6 3.5 1.4 0.7	U - - - -	U - - - -
PR-1955 BT	Product Research Corporation	9120			0.066	15/20 12/20 4/20 6/20 1/20	10 7.7 5.6 3.5 1.4	U - - -	U - - -
PR-1955 BT	Product Research Corporation	8863			0.250	12/20 7/20 8/20	10 7.7 5.6	U - -	U - -
PR-1955 HT	Product Research Corporation	9385			0.350	14/20 11/20 5/20 1/20	10 7.7 5.6 3.5	U - -	U - -
PR-1955 with Top Coat P-81-2018	Product Research Corporation	4601			0.050	2/3 2/5 2/15	10 8 5	U - -	U - -
PR-1955 with Top Coat P-81-2018	Product Research Corporation	4504			0.050	2/2 2/2 2/3 2/2 2/2 2/2	10 8 6 4 3 1	U - - - - -	U - - - - -

TABLE IV. PLASTICS, ELASTOMERS, AND ADHESIVES (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/ No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
PR-1955 with Top Coat P-81-2018	Product Research Corporation	492			0.025	2/2 2/2 2/2 2/2 2/2	10 8 6 4 2 1	U - - - - -	U - - - - -
PR-1955 with Top Coat P-81-2018	Product Research Corporation	4591			0.015	2/2 2/4 2/4 2/6 2/8	10 8 6 4 2	U - - - - -	U - - - - -
PR-1955 with Top Coat P-81-208	Product Research Corporation	4582			0.050	2/2 2/8 2/5 2/10 2/8 2/20	10 8 6 4 3 2	U - - - - -	U - - - - -
PR-1955 with Top Coat P-81-2020	Product Research Corporation	4584			0.025	2/2 2/2 2/2 2/5 2/4 2/6	10 8 6 4 2 1	U - - - - -	U - - - - -
PR-1955 with Top Coat P-81-2035	Product Research Corporation	4587			0.015	2/2 2/2 2/2 2/4 2/2 0/20	10 8 6 4 2 1	U - - - - -	U - - - - -
PT-201 and Solvent PT-1001	Product Techniques Incorporated	1893	Phenolic epoxy			1/1 1/1 1/2	10 5 2	U - - - - -	U - - - - -
PT-201 Coated Coil Spring	Product Techniques Incorporated	3615				3/10 2/9 0/4	10 5 3	U - - - - -	U - - - - -



TABLE IV. PLASTICS, ELASTOMERS, AND ADHESIVES (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/ No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
Pyro Prey AC-81 Type 1 Plastic	Cordco Molding Products Incorporated	916	Phenolic impregnated fiberglass		0.060	2/2 2/2 2/3	10 5 3	U - -	U - -
Quantel 1682	Quantum, Incorporated	8502	Polyimide		0.005	0/40	10	S	BT
Q90-002A/B	Dow Corning Corporation	4486	Fluorosilicone	Rubber sealant	0.050	2/7 2/20 0/20	10 5 4	U - -	U - -
Q90-031	Dow Corning Corporation	4484	Fluorosilicone		0.050	2/5 2/6 0/18 0/20	10 5 4 3	U - - -	U - - -
Q2-0103	Dow Corning Corporation	4482			0.050	2/2 2/4 2/17 0/5 1/20	10 5 3 2 1	U - - - -	U - - - -
Q9-002A and B Adhesive	Dow Corning Corporation	3532	Fluorosilicone rubber	RTV cured	0.050	0-2/20	10	U	U
Q-2-0046 Adhesive	Dow Corning Corporation	3339	Fluorosilicone rubber	RTV cured	0.050	1/140	10	S	U
Q-2-0046 Adhesive	Dow Corning Corporation	3788	Fluorosilicone rubber	RTV cured	0.025	38/40	10	U	U
Q94-002	Dow Corning Corporation	5314	Fluorosilicone rubber	Rubber sealant	0.050	2/20	10	U	U
Q94-002	Dow Corning Corporation	5503	Fluorosilicone rubber	Rubber sealant	0.013	1/20 0/20	11.3 10	- S	U -
Q94-002	Dow Corning Corporation	5505	Fluorosilicone rubber	Rubber sealant	0.058	3/20 3/20	10 8	U -	U -
Q94-002	Dow Corning Corporation	5507	Fluorosilicone rubber	Rubber sealant	0.032	12/20 12/20	10 8	U -	U -
Q94-002	Dow Corning Corporation	5509	Fluorosilicone rubber	Rubber sealant	0.020	13/20 15/20	10 8	U -	U -
Q2-0046, Lot 010101	Dow Corning Corporation	6924		Samples aged for 2 weeks	0.050	4/20	10	U	U

TABLE IV. PLASTICS, ELASTOMERS, AND ADHESIVES (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/ No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
Q94-002	Dow Corning Corporation	5921	Fluorosilicone	Not cured	0.050	3/20	10	U	U
Q94-002 (old sample)	Dow Corning Corporation	5910	Fluorosilicone		0.050	3/20	10	U	U
Q94-002, Lot NB06-5	Dow Corning Corporation	6975	Fluorosilicone		0.050	2/20	10	U	U
Q94-002, Lot 1531	Dow Corning Corporation	5920	Fluorosilicone		0.050	4/20	10	U	U
Q94-002, Lot 1531	Dow Corning Corporation	5927	Fluorosilicone		0.050	11/20	10	U	U
Q94-002, Lot 1531	Dow Corning Corporation	5926	Fluorosilicone		0.085	10/20	10	U	U
Q94-002, Lot 1531	Dow Corning Corporation	5928	Fluorosilicone		0.105	5/20	10	U	U
Raycom 2148 RPR	Raytheon Company	3853			0.125	2/20	10	U	U
Red Wing Silicone Rubber		1907			0.063	20/20 20/20 14/20 1/20	10 5 3 1	U - - -	U - - -
Red Wing Silicone Rubber		1921		Two 0.063 inches stacked to make 0.125	0.125	17/20 4/20 0/20	10 3 1	U - -	U - -
Relco A (50%) + Relco B (50%)	Reliance Steel Products Co.	2962	Epoxy	Brush coating on stainless steel inserts	0.063	2/20	10	U	U
Relco A + Relco B + Grit	Reliance Steel Products Co.	2963	Epoxy		0.063	3/5 2/5 2/3 1/8	10 5 3 2	U - - -	U - - -
Ricote (MIP) 100-C-1	Modern Industrial Plastics Division of the Durison Co., Incorporated	4010				7/20	10	U	U
RTV 511, 20/480°F	General Electric	5903 5954 5980		Stainless steel inserts	0.031	14/20 4/20 2/20 2/20 2/20	10 8 6 2 1	U	U

TABLE IV. PLASTICS, ELASTOMERS, AND ADHESIVES (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/ No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
RTV 511, 20/480°F	General Electric	5901 5956		Stainless steel inserts	0.062	2/40 7/20 0/20	10 8 4	U	U
RTV-560, 20/480°F	General Electric	5895 5958		Stainless steel inserts	0.031	14/20 18/20 15/20 20/20 6/20 4/20	10 8 6 4 2 1	U	U
RTV-560, 20/480°F	General Electric	5896 5961		Stainless steel inserts	0.062	3/20 4/20 5/20 4/20 2/20 0/20	10 8 6 4 2 1	U	U
No. 601 Rubber	Raybestos-Manhattan	5809		Stainless steel inserts	0.035	1/20	10	I	I
RT/Duroid 5813	Rogers Corporation	7397		Stainless steel inserts	0.036	0/20	10	S	BT
RT/Duroid 5870	Rogers Corporation	7398		Stainless steel inserts	0.053	0/20	10	S	BT
RTV-S-53V-70 Density = 10 lb/ft <sup>3</sup>	Dow Corning Corporation	6239		Flexible foam	0.400	20/20 20/20 20/20 11/20 0/20	10 8 6 4 2 1	U	U
Rulon A, Lot PA-2 (Dixon No. E-3846)	Dixon Corporation	5922			0.050	0/20	10	S	S
Rulon Sheet	Dixon Corporation	5589	Teflon composite	Stainless steel inserts used	0.060	0/20	10	S	BT
Rulon A	Dixon Corporation	9131	Filled tetrafluoroethylene		0.063	0/20	10	S	S
Sauereisen Low Expansion Cement No. 29	Sauereisen Cement Company	2495	Zirconium base		0.050	0/20	10	S	S

TABLE IV. PLASTICS, ELASTOMERS, AND ADHESIVES (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/ No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
Scotchcast Resin No. 11	Minnesota Mining and Manufacturing Company	9913			0.050	6/20	10	U	U
Scotch Ply Type 1002	Minnesota Mining and Manufacturing Company	9240	Epoxy resin with non-woven glass filament		0.113	20/20 20/20	10	U	U
Scotch Tape No. Y-9089	Minnesota Mining and Manufacturing Company	2853	Pluton fabric, neoprene base adhesive		0.063	20/20 2/2 0/20	10 5 1	U — —	U — —
Scotch Pressure Sensitive Tape No. Y-9050	Minnesota Mining and Manufacturing Company	2852				17/20 9/10 0/20	10 5 1	U — —	U — —
Scotch Plastic Film, Type 546	Minnesota Mining and Manufacturing Company	6249	Adhesive free Teflon	Stainless steel inserts	0.010	0/20	10	S	S
Scotch Electrical Tape No. 27	Minnesota Mining and Manufacturing Company	631	White glass cloth with thermosetting adhesive		0.007	4/5 5/6 3/3	10 5 1	U — —	U — —
Scotch Electrical Tape No. 33	Minnesota Mining and Manufacturing Company	516	Black vinyl plastic with pressure sensitive adhesive		0.010	2/4 2/3 0/2	10 5 2	U — —	U — —
Scotch Electrical Tape No. 60	Minnesota Mining and Manufacturing Company	496	Teflon and silicone adhesive		0.006	2/3 2/7	10 5	U —	U —
Scotch Electrical Tape No. 61	Minnesota Mining and Manufacturing Company	1271	Teflon and silicone adhesive		0.006	2/2 2/4	10 5	U —	U —
Scotch Resin No. CRP-235	Minnesota Mining and Manufacturing Company	712	Epoxy	One part "A" and two parts "B" cured at 30°C for 1/2 hour		3/6 1/14	10 5	U —	U —
Scotch Electrical Tape No. 27	Minnesota Mining and Manufacturing Company	517				3/4 2/2	10 3	U —	U —
Scotch Tape No. 506	Minnesota Mining and Manufacturing Company	630				3/4 2/5	10 5	U —	U —
Scotch Teflon Tape No. 536	Minnesota Mining and Manufacturing Company	149				3/10 1/10 1/7	10 5 8	U — —	U — —

TABLE IV. PLASTICS, ELASTOMERS, AND ADHESIVES (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
RTV 511, 20/480° F	General Electric	5901 5956		Stainless steel inserts	0.062	2/40 7/20 0/20	10 8 4	U	U
RTV-560, 20/480° F	General Electric	5895 5958		Stainless steel inserts	0.031	14/20 18/20 15/20 20/20 6/20 4/20	10 8 6 4 2 1	U	U
RTV-560, 20/480° F	General Electric	5896 5961		Stainless steel inserts	0.062	3/20 4/20 5/20 4/20 2/20 0/20	10 8 6 4 2 1	U	U
No. 601 Rubber	Raybestos-Manhattan	5809		Stainless steel inserts	0.035	1/20	10	I	I
RT/Duroid 5813	Rogers Corporation	7397		Stainless steel inserts	0.036	0/20	10	S	BT
RT/Duroid 5870	Rogers Corporation	7398		Stainless steel inserts	0.053	0/20	10	S	BT
RTV-S-53V-70 Density = 10 lb/ft <sup>3</sup>	Dow Corning Corporation	6239		Flexible foam	0.400	20/20 20/20 20/20 20/20 11/20 0/20	10 8 6 4 2 1	U	U
Rulon A, Lot PA-2 (Dixon No. E-3846)	Dixon Corporation	5922			0.050	0/20	10	S	S
Rulon Sheet	Dixon Corporation	5589	Teflon composite	Stainless steel inserts used	0.060	0/20	10	S	BT
Rulon A	Dixon Corporation	9131	Filled tetrafluoroethylene		0.063	0/20	10	S	S
Sauerisen Low Expansion Cement No. 29	Sauerisen Cement Company	2495	Zirconium base		0.050	0/20	10	S	S

TABLE IV. PLASTICS, ELASTOMERS, AND ADHESIVES (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/ No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
Scotch Teflon Tape No. 547	Minnesota Mining and Manufacturing Company	37				0/10	10	I	I
Scotch Teflon Tape No. 549	Minnesota Mining and Manufacturing Company	786				2/2 2/5 1/13	10 5 2	U	U
Series R, Spun Bonded Olefin Paper	E.I. du Pont de Nemours and Company	8217			0.005	19/20	10	U	U
Silastic RTV 94-002, Lot 162116 (lab. run)	Dow Corning Corporation	6611		Cured 30 days at 110°C	0.111	7/20	10	U	U
Silicone Tape S-5638	Dow Corning Corporation	6637		Stainless steel inserts	0.022	19/20	10	U	U
Silastic No. 50 Rubber	Dow Corning Corporation	736	Silicone rubber			2/2 2/6 2/4	10 5 2	U	U
Silastic No. 675	Dow Corning Corporation	163				2/3 2/2 1/1	10 5 2	U	U
Silastic No. 50-24-480	Dow Corning Corporation	514				8/10	10	U	U
Silastic No. 80-24-480	Dow Corning Corporation	164				7/10	10	U	U
Silastic No. 290-24-480	Dow Corning Corporation	321				2/10 1/10	10 5	U	U
Silastic No. 916-4-480	Dow Corning Corporation	980				2/2 3/15	10 5	U	U
Silastic LS-53	Dow Corning Corporation	549				2/7 2/8 0/5	10 5 2	U	U
Silastic LS-53-24-300	Dow Corning Corporation	1007				2/3 2/5	10 5	U	U
Silastic LS-13-8-400	Dow Corning Corporation	547				2/8 3/10 0/2	10 5 2	U	U

TABLE IV. PLASTICS, ELASTOMERS, AND ADHESIVES (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/ No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
Stycast 2651		2757	Epoxy		0.063	2/2 2/2 2/3 0/20	10 5 3 1	U - - -	U - - -
Teflon (virgin)	E.I. du Pont de Nemours & Company, Incorporated	3402	Polytetrafluoroethylene		0.002	0/20	10	S	S
Teflon (virgin)	E.I. du Pont de Nemours & Company, Incorporated	3403	Polytetrafluoroethylene		0.006	0/20	10	S	S
Tedlar 50 SG 20TR	E.I. du Pont de Nemours & Company, Incorporated	4874	Polyvinyl fluoride film	Stainless steel inserts used	0.005	18/20 17/20 18/20	10 8 7	U - -	U - -
Tedlar 100S30	E.I. du Pont de Nemours & Company, Incorporated	4613	Polyvinyl fluoride film	Stainless steel inserts used	0.001	8/20	10	U	U
Tedlar 150A1 30 WH	E.I. du Pont de Nemours & Company, Incorporated	4873	Polyvinyl fluoride film	Stainless steel inserts used. Tested in air	0.002	0/20	10	S	U
Tedlar 150A1 30 WH	E.I. du Pont de Nemours & Company, Incorporated	4797	Polyvinyl fluoride film	Stainless steel inserts used	0.002	3/20	10	U	U
Tedlar 200 AM 30 WH	E.I. du Pont de Nemours & Company, Incorporated	4890	Polyvinyl fluoride film		0.002	4/29 1/20 0/20 0/13	10 9 8 5	U - - -	U - - -
Tedlar 200BK 30 WH	E.I. du Pont de Nemours & Company, Incorporated	4886	Polyvinyl fluoride film		0.002	4/25 1/20 0/20 1/35	10 8 7 5	U - - -	U - - -
Tedlar 200 BP	E.I. du Pont de Nemours & Company, Incorporated	4610	Polyvinyl fluoride film		0.002	3/60	10	U	U
Tedlar 200S 30 WH	E.I. du Pont de Nemours & Company, Incorporated	4611	Polyvinyl fluoride film		0.002	3/20	10	U	U
Tedlar 200S 40	E.I. du Pont de Nemours & Company, Incorporated	4612	Polyvinyl fluoride film		0.002	5/20	10	U	U

TABLE IV. PLASTICS, ELASTOMERS, AND ADHESIVES (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/ No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
Tenite II	MSFC	6469	Cellulose acetate butyrate	Stainless steel inserts	0.005	15/20 12/20 6/20 4/20 0/20	10 8 6 4 2	U	U
Tenite II	MSFC	6464	Cellulose acetate butyrate	Stainless steel inserts	0.010	13/20 6/20 8/20 3/20 0/20	10 8 6 4 2	U	U
Tenite II	MSFC	6459	Cellulose acetate butyrate	Stainless steel inserts	0.020	14/20 9/20 7/20 0/20 0/20	10 8 6 4 2	U	U
Tenite II	MSFC	6456	Cellulose acetate butyrate	Stainless steel inserts	0.030	12/20 8/20 11/20 4/20 0/20	10 8 6 4 2	U	U
Tenite II	MSFC	6537	Cellulose acetate butyrate	No stainless steel inserts	0.040	2/20 5/20 4/20 3/20 0/20	10 8 6 4 2	U	U
Tenite II	MSFC	6556	Cellulose acetate butyrate	Stainless steel inserts	0.040	12/20 6/20 4/20 0/20	10 8 6 4	U	U
Tenite II	MSFC	6551	Cellulose acetate butyrate	Stainless steel inserts	0.050	7/20 7/20 3/20 0/20 0/20	10 8 6 4 2	U	U
Tenite II	MSFC	6542	Cellulose acetate butyrate	Stainless steel inserts	0.080	6/20 3/20 3/20 0/20	10 8 6 4	U	U



TABLE IV. PLASTICS, ELASTOMERS, AND ADHESIVES (Continued)

Material	Manufacturer or Source	Test No.	Compositi	Remarks	Thickness (inch)	No. Reactions/ No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
Titan II Space Suit Material, DuPont HT-7 and Butyl Rubber	Arrowhead Products Company	5659			0.015	20/20 20/20 20/20 20/20 20/20 20/20 4/20	10 8 6 4 2 1	U	U
Teflon 403-108	E.I. du Pont de Nemours & Company, Incorporated	5576	Polytetrafluoroethylene coated glass fabric		0.003	0/20 0/20	11.3 10	S	BT
Teflon 405-113	E.I. du Pont de Nemours & Company, Incorporated	5582	Polytetrafluoroethylene coated glass fabric		0.005	0/20 0/20	11.3 10	S	BT
Teflon 406-116	E.I. du Pont de Nemours & Company, Incorporated	5580	Polytetrafluoroethylene coated glass fabric		0.006	0/20 0/20	11.3 10	S	BT
Teflon 408-128	E.I. du Pont de Nemours & Company, Incorporated	5584	Polytetrafluoroethylene coated glass fabric		0.008	0/20 0/20	11.3 10	S	BT
Teflon 410-112	E.I. du Pont de Nemours & Company, Incorporated	5577	Polytetrafluoroethylene coated glass fabric		0.010	0/20	11.3	S	BT
Teflon 414-141	E.I. du Pont de Nemours & Company, Incorporated	5578	Polytetrafluoroethylene coated glass fabric		0.014	0/20	11.3	S	BT
Teflon TFE, Fiber 400-60-0 (Merge 10419)	E.I. du Pont de Nemours & Company, Incorporated	6829	Fluorocarbon			4/20 2/20	10 10	U	U
Teflon TFE, Fiber 1350-180-0 (Merge 10458)	E.I. du Pont de Nemours & Company, Incorporated	6831	Fluorocarbon			0/20	10	S	BT
Teflon TFE Hose No. 1		7613		Washed with F-33 Stainless steel inserts	0.070	0/20	10	S	BT
Teflon TFE Hose No. 1 14B		7295			0.082	0/20	10	S	BT
Teflon TFE Hose No. 2		7614			0.070	0/20	10	S	BT
Teflon TFE Hose No. 2 14B		7296		Washed in F-33 Stainless steel inserts	0.072	0/20	10	S	BT
Teflon TFE Hose No. 3		7297		Washed in F-33 Stainless steel inserts	0.060	0/20	10	S	BT

TABLE IV. PLASTICS, ELASTOMERS, AND ADHESIVES (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/ No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
Teflon TFE Hose No. 4		7298		Washed in F-33 Stainless steel inserts	0.060	0/20	10	S	BT
GRGA-0213	Non-Metallic Materials Branch	10256			0.015	20/20	10	U	U
Teflon TFE Sheet	Chemplast, Incorporated	8799		Virgin, unfilled, undyed	0.002	0/20	10	S	BT
Teflon TFE Sewing Thread DXHE MT400	The Mason Silk Company	5992				14/20	10	U	U
Teflon-TFE Coated 6061-T6 Aluminum Coating: DuPont 850-311 Catalyst: VM-7799	Trans-Sonics	6455	Teflon	Stainless steel inserts	0.007	0/20	10	S	S
5% Teflon TFE Dispersion	Dow Corning Corporation	5848				0/20	10	S	BT
Teflon TFE Coated Glass Cloth No. 410-128	E.I. du Pont de Nemours & Company, Incorporated	5484			0.010	2/20	10	U	BT
Teflon TFE Coated Glass Cloth No. 405-112	E.I. du Pont de Nemours & Company, Incorporated	5354			0.005	1/20 0/20	11.3 10	- S	BT BT
Teflon TFE Coated Glass Fabric No. 410-112	E.I. du Pont de Nemours & Company, Incorporated	5485			0.010	0/20	10	S	BT
Teflon TFE Coated Glass Fabric No. 414-141	E.I. du Pont de Nemours & Company, Incorporated	5486			0.014	0/20	10	S	BT
Teflon Lacing Tape Temp-Lace Style 256	Gudebrand Brothers Silk Company	4794				0/20	10	S	BT
Teflon Sleeve from Adel Clamp									
Teflon XA 102A522	Goodyear Corporation	3389		Virgin, unfilled, undyed	0.032	0/20	10	S	BT
		3492	Polytetrafluoroethylene	Spray film	0.006	2/20 1/2 0/20	10 9 8	U - -	BT - -
Teflon XA 102A522	Goodyear Corporation	3491	Polytetrafluoroethylene	Spray film	0.015	0/20	10	S	BT
Teflon FEP (virgin)	E.I. du Pont de Nemours & Company, Incorporated	1247	Fluorinated ethylene- propylene polymer			0/20	10	S	S

TABLE IV. PLASTICS, ELASTOMERS, AND ADHESIVES (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
Teflon, TFE Virgin	E.I. du Pont de Nemours & Company, Incorporated	3489	Polytetrafluoroethylene		0.032	0/20	10	S	S
Teflon, TFE White Sheet Stock	E.I. du Pont de Nemours & Company, Incorporated	5128	Polytetrafluoroethylene		0.063	0/40	10	S	S
Teflon, TFE White Hose Lining	E.I. du Pont de Nemours & Company, Incorporated	95	Polytetrafluoroethylene			0/20	10	S	BT
Teflon, Red Hose Lining	E.I. du Pont de Nemours & Company, Incorporated	96	Polytetrafluoroethylene	Pigmentation affects test results		0-2/20	10	-	BT
Teflon Tube (Thermofit TFE)	Rayclad Tubes Incorporated	1830	Polytetrafluoroethylene		0.016	0/20	10	S	BT
Teflon FEP Film with Teflon TFE Felt	E.I. du Pont de Nemours & Company, Incorporated	4190	Polytetrafluoroethylene	0.005 in. film between two pieces 0.125 in. felt	0.255	0/40	10	S	BT
Teflon FEP Type 544	E.I. du Pont de Nemours & Company, Incorporated	3527	Polytetrafluoroethylene	not filled, not dyed	0.001	0/20	10	S	S
Teflon FEP Virgin	E.I. du Pont de Nemours & Company, Incorporated	3366	Polytetrafluoroethylene	not filled, not dyed	0.01	0/20	10	S	S
Teflon FEP Virgin	E.I. du Pont de Nemours & Company, Incorporated	3367	Polytetrafluoroethylene	not filled, not dyed	0.021	0/20	10	S	S
Teflon FEP Virgin	E.I. du Pont de Nemours & Company, Incorporated	3365	Polytetrafluoroethylene	not filled, not dyed	0.005	0/20	10	S	S
Teflon FEP and Aluminum	E.I. du Pont de Nemours & Company, Incorporated	4188	Aluminum and Polytetrafluoroethylene	FEP-2 mils, aluminum 2 mils, FEP-2 mils	0.006	0/40	10	S	BT
Teflon 30 TFE	E.I. du Pont de Nemours & Company, Incorporated	3516	Polytetrafluoroethylene	Two batches tested		0/20	10	S	BT
Teflon 856-200	E.I. du Pont de Nemours & Company, Incorporated	3641	Polytetrafluoroethylene		0.006	0/20	10	S	S
Teflon TFE Dupont Enamel 852-202	E.I. du Pont de Nemours & Company, Incorporated	3504	Polytetrafluoroethylene		0.001	0/20	10	S	S
Teflon, Dupont Clear Lacquer No. 852-202 over Dupont Primer No. 850-204	E.I. du Pont de Nemours & Company, Incorporated	1597	Polytetrafluoroethylene	321 stainless inserts used		0/20	10	S	S

TABLE IV. PLASTICS, ELASTOMERS, AND ADHESIVES (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
Teflon, Dupont Primer No. 850-204	E.I. du Pont de Nemours & Company, Incorporated	1596	Polytetrafluoroethylene	321 stainless inserts used		0/20	10	S	S
Teflon, Dupont Green Primer No. 850-204 and Clear Lacquer No. 850-202	U.S. Aircraft Products Co.	1777	Polytetrafluoroethylene	On 321 stainless steel inserts		0/20	10	S	S
Teflon Covering from Cable		3802	Polytetrafluoroethylene		0.020	0/20	10	S	BT
Teflon Coated Flat Conductor Shielded Type A NASA-PCH-41286	Method Cable Company	4287	Teflon and copper	Organic adhesive	0.028	5/40	10	U	U
Teflon Coating No. 852-201 over Primer No. 850-201	E.I. du Pont de Nemours & Company, Incorporated	1308	Polytetrafluoroethylene	Applied to stainless steel discs		0/20	10	S	S
Teflon Coating No. 251-214	E.I. du Pont de Nemours & Company, Incorporated	1282	Polytetrafluoroethylene	Applied to stainless steel discs		0/20	10	S	S
Teflon O-Ring	Various	1927	Polytetrafluoroethylene			0/20	10	S	BT
Teflon Helix	Connecticut Hard Rubber Co.	4508	Teflon with bonding agent		0.025	18/20 2/10 1/2 0/20	10 3 2 1	U - - -	U - - -
Teflon-Resin Spray 852-204	E.I. du Pont de Nemours & Company, Incorporated	4473		Sprayed on stainless steel inserts	0.003	0/20	10	S	U
Telcon	Alvin Products Incorporated	3850	Fluorocarbon	Spray film		0/20	10	S	BT
Thermo-Dip		5063		Stainless steel inserts dipped in melted thermoplastic		12/20	10	U	U
Thermoplas Formula 1500	Sargent Engineering Corp.	3775			0.050	5/5 5/5 5/5 5/5	10 5 3 2 1	U - - - -	U - - - -
Thermoplas Formula 1501	Sargent Engineering Corp.	3778			0.050	0/40	10	S	BT
Thermo-Resist 69		3875			0.063	11/20	10	U	U
Temporell No. 741	Orell Incorporated	1656				2/2 2/2 2/2 4/14	10 5 2 1	U - - -	U - - -
Temporell No. 740	Orell Incorporated	1657				1/1 1/1 7/7	10 2 1	U - -	U - -

TABLE IV. PLASTICS, ELASTOMERS, AND ADHESIVES (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/ No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
Temp-R-Tape I	Connecticut Hard Rubber Co.	3643	Polytetrafluoroethylene with silicone polymer adhesive			3/20 2/20 3/20 0/20	10 5 4 1	U - - -	U - - -
Union Carbide 40-S Dimethylsilicone	Union Carbide Chemical Corporation	4804			0.063	2/20	10	U	U
Vinylloyd No. 5909	Vinylloyd Company	143	Chlorofluorocarbon		0.032	0/20	10	S	BT
Viton A on Teflon 86007	E.I. du Pont de Nemours & Company, Incorporated	914			0.020	2/7 0/15	10 5	U -	BT -
Velcro Hi Grade	Velcro Corporation	9287	Stainless steel backs, Elgiloy hooks, and Inconel pile		0.063	0/20	10	S	BT
Velcro Hi Meg	Velcro Corporation	9288	Hook, pile, and backing Nylon		0.063	20/20	10	U	U
VespeI Discs (Polymer SP-1)	E.I. du Pont de Nemours & Company, Incorporated	8712	Polyimide	Batch SP-1-45	0.050	6/20	10	U	U
VespeI Discs (Polymer SP-1)	E.I. du Pont de Nemours & Company, Incorporated	9784	Polyimide	Batch 10246-29-2	0.050	1/60	10	S	U
VespeI Discs (Polymer SP-1)	E.I. du Pont de Nemours & Company, Incorporated	9221	Polyimide	Batch 10246-11-2	0.050	4/20	10	U	U
VespeI Discs (Polymer SP-1)	E.I. du Pont de Nemours & Company, Incorporated	9904	Polyimide	Batch 1089-0-79-2	0.050	0/20	10	S	U
VespeI Discs (Polymer SP-1)	E.I. du Pont de Nemours & Company, Incorporated	9966	Polyimide	Batch 10890-197-1	0.050	3/20	10	U	U
VespeI Discs (Polymer SP-3)	E.I. du Pont de Nemours & Company, Incorporated	9223	Polyimide	Batch 10077-138-3	0.050	0/20	10	S	BT
VespeI Discs (Polymer SP-21)	E.I. du Pont de Nemours & Company, Incorporated	9905	Polyimide filled with 15 percent graphite	Batch 10890-115-2	0.050	0/20	10	S	BT
VespeI Discs (Polymer SP-21)	E.I. du Pont de Nemours & Company, Incorporated	8713	Polyimide filled with 15 percent graphite	Batch P-530	0.050	0/20	10	S	BT
VespeI Discs (Polymer SP-21)	E.I. du Pont de Nemours & Company, Incorporated	10067	Polyimide filled with 15 percent graphite	Batch SRB-184	0.050	0/20	10	S	BT

TABLE IV. PLASTICS, ELASTOMERS, AND ADHESIVES (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/ No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
Vespal Discs (Polymer SP-21)	E.I. du Pont de Nemours & Company, Incorporated	10402	Polyimide filled with 15 percent graphite	Batch 11052-37-2-M-64	0.050	0/20	10	S	BT
Vespal Discs (Polymer SP-21)	E.I. du Pont de Nemours & Company, Incorporated	10404	Polyimide filled with 10 percent graphite	Batch 1122-78	0.050	0/20	10	S	BT
Velostat, Conductive Polyolefin	Custom Materials, Incorporated	6011			0.005	8/20 7/20 3/20 0/20	10 8 6 4	U	U
Vin-LOX Sealant	Vin-LOX Corporation	7289	Vinyl polymer emulsion	Cured 10 days at room temperature	0.050	20/20 20/20 20/20 17/20 6/20 2/20	10 7.62 5.54 3.46 1.39 0.70	U	U
Vithane No. 1		6615			0.025	18/20	10	U	U
Vithane No. 2 (Viton Coated)		6614			0.25	19/20	10	U	U
Vinyl Covered Nylon		616				2/8 1/10	10 5	U	U
Vinyl Tubing		674				2/8 3/5	10 5	U	U
Vynkote	Spectra-Strip Wire and Cable Corporation	976				2/6 4/14	10 5	U	U
VXR 5C	Minnesota Mining and Manufacturing Company	1046	Epoxy		0.003	2/25 0/35	10 5	U	U

TABLE IV. PLASTICS, ELASTOMERS, AND ADHESIVES (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/ No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
Vimasco WC-1		5404			0.050	19/20	10	U	U
Viton A-80-001	E.I. du Pont de Nemours & Company, Incorporated	4603		Stainless steel inserts used	0.047	0/40	10	S	BT
Viton A Plus Teflon No. 86007	E.I. du Pont de Nemours & Company, Incorporated	4606		Stainless steel inserts used	0.025	0/40	10	S	BT
Viton A Hose	E.I. du Pont de Nemours & Company, Incorporated	4798			0.063	3/20	10	U	BT
Viton Sponge	Connecticut Hard Rubber Co.	4806			0.250	9/20	10	U	U
Viton A		5946			0.125	0/20	10	S	BT
Viton A. A-34470	R-P&VE-M	6080			0.065	0/20	10	S	BT
Viton A O-Ring Z-100, 19535-1 21625-1		6075		Stainless steel inserts	0.104	0/20	10	S	BT
		6074		Stainless steel inserts	0.104	0/20	10	S	BT
Viton A, MIL-R-25897	Aeroquip Corporation	6520		Stainless steel inserts	0.100	0/20	10	S	BT
		6521		Stainless steel inserts	0.100	0/20	10	S	BT
Viton Compound V702-0, Batch 12304	I. B. Moore Company	6956			0.047	2/20	10	U	BT
Viton A Compound 17107A	Precision Rubber Company	7309		Fibro Seal Batch SR 277-70	0.144	0/20	10	S	BT
Viton A O-Ring IIS-8-513-16		7396				0/20	10	S	BT
Viton A O-Ring	B.H. Hadley, Inc.	6333		Stainless steel inserts Washed with F-33		0/20	10	S	BT

TABLE IV. PLASTICS, ELASTOMERS, AND ADHESIVES (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (in.)	No. Reactions/ No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
Viton A O-Ring Batch 01284 Batch 01382 Batch 01382	B.H. Hadley, Inc.	7023		Same as above		0/20	10	S	BT
		7283		Same as above		2/20	10	U	BT
		7021		Stainless steel inserts As received		6/20	10	U	BT
Batch 02656		7020		Same as above		9/20	10	U	BT
Batch 03919		7019		Same as above		3/20	10	U	BT
Batch 04204		7025		Stainless steel inserts Washed in F-33		0/20	10	S	BT
Batch 05549		7022		Same as above		0/20	10	S	BT
Batch 05764		7024		Same as above		0/20	10	S	BT
Batch 05828		7018		Same as above		7/20	10	U	BT
Batch P HS-8513-224		7360		As Received		2/20	10	U	BT
Viton A O-Ring, Batch No. 01911, MIL-R-25897, NAS 1593-11	Parker-Hannifin Corp.	6768		Stainless steel inserts		3/20	10	U	BT
Viton A O-Ring, Batch No. 01911, MIL-R-25897, NAS 1593-13	Parker-Hannifin Corp.	6767		Stainless steel inserts		1/20	10	I	BT
Viton A O-Ring, Batch No. 01911, MIL-R-25897, NAS 1593-16	Parker-Hannifin Corp.	6766		Stainless steel inserts		2/20	10	U	BT
Viton A O-Ring, Batch No. 02404, Part No. SP133-7	Parker Aircraft	6076	DuPont 77-545		0.063	2/27 2/20	10 8	U	BT
Viton A O-Ring, Batch No. 02460, Part No. SP-133-3	Parker Aircraft	6078				2/20 3/20	10 8	U	BT
Viton A O-Ring, Batch No. 03447, NAS 1593 2-16	Parker-Hannifin Corp.	6933		Stainless steel inserts	0.066	5/20	10	U	BT
Viton A O-Ring, Batch No. 05018, NAS 1593 2-12	Parker-Hannifin Corp.	6935		Stainless steel inserts	0.066	5/20	10	U	BT
Viton A O-Ring, Batch No. 05427, NAS 1593 2-13	Parker-Hannifin Corp.	6934		Stainless steel inserts	0.068	2/20	10	U	BT
Viton A O-Ring, Batch No. 05483, NAS 1593 2-11	Parker-Hannifin Corp.	6936		Stainless steel inserts	0.064	9/20	10	U	BT



TABLE IV. PLASTICS, ELASTOMERS, AND ADHESIVES (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/ No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
Viton A O-Ring, Compound 920-70 OC, Batch 23632	Plastic & Rubber Products Company	6388				2/20	10	U	BT
Viton A O-Ring, Compound 920-90 OC, Batch 24884	Plastic & Rubber Products Company	6386				2/22	10	U	BT
Viton O-Rings, Size 2-34	Parker Seal Company	9953	Compound 77-545	Batch 02107Z		0-1/20	10	-	BT
Viton O-Rings, Size 2-38	Parker Seal Company	9979	Compound 77-545	Batch 02095Z		18/300	10	U	BT
Viton O-Rings, Size 2-115	Parker Seal Company	10282	Compound 77-545	Batch 02181		17/40	10	U	BT
Viton O-Rings, Size 2-155	Parker Seal Company	8260	Compound 77-545	Batch 06780		2/20	10	U	BT
Viton O-Rings, Size 2-466	Parker Seal Company	8261	Compound 77-545	Batch 06739		0/20	10	S	BT
Viton O-Rings, Size 2-160	Parker Seal Company	9942	Compound 77-545	Batch 02107Z		2/20	10	U	BT
Viton O-Rings, Size 2-161	Parker Seal Company	9956	Compound 77-545	Batch 2142H		0/20	10	S	BT
Viton O-Rings	Plastics and Rubber Products Company	10232		Five sizes evaluated		2-4/20	10	U	BT
Viton O-Rings, Size 2-34	Parker Seal Company	9953	Compound 77-545	Batch 02107Z		0-1/20	10	-	BT
Viton O-Rings, Size 2-38	Parker Seal Company	9979	Compound 77-545	Batch 02095Z		18/300	10	U	BT
Viton O-Rings, Size 2-115	Parker Seal Company	10282	Compound 77-545	Batch 02181		17/40	10	U	BT
Viton O-Rings, Size 2-155	Parker Seal Company	8260	Compound 77-545	Batch 06780		2/20	10	U	BT
Viton O-Rings, Size 2-466	Parker Seal Company	8261	Compound 77-545	Batch 06739		0/20	10	S	BT
Viton O-Rings, Size 2-160	Parker Seal Company	9942	Compound 77-545	Batch 02107Z		2/20	10	U	BT
Viton O-Rings, Size 2-161	Parker Seal Company	9956	Compound 77-545	Batch 2142H		0/20	10	S	BT
Viton O-Rings	Plastics and Rubber Products Company	10232		Five sizes evaluated		2-4/20	10	U	BT
Viton O-Rings, Size 013	Precision Rubber Products Company	8814	Compound 17107			0/20	10	S	BT

TABLE IV. PLASTICS, ELASTOMERS, AND ADHESIVES (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/ No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
Viton O-Rings, Size 121	Precision Rubber Products Company	8815	Compound 17107			0/20	10	S	BT
Viton O-Rings, Size 222	Precision Rubber Products Company	8816	Compound 17107			3/20	10	U	BT
Viton O-Rings, Size 228	Precision Rubber Products Company	8823	Compound 17107			4/40	10	U	BT
Viton O-Rings, Size 010	Precision Rubber Products Company	9971	Compound 19009	Cured 3rd Qtr 1967		0/40	10	S	BT
Viton O-Rings, Size 014	Precision Rubber Products Company	9790	Compound 19009	Cured 3rd Qtr 1967		0/40	10	S	BT
Viton O-Rings, Size 006	Precision Rubber Products Company	9914	Compound 1900-X44	Batch 6L and 9L		7/80	10	U	BT
Viton O-Rings, Size 009	Precision Rubber Products Company	9931	Compound 1900-X44	Lot C-3019		0/20	10	S	BT
Viton O-Rings, Size 010	Precision Rubber Products Company	9999	Compound 1900-X44	Batch 9L		4/20	10	U	BT
Viton O-Rings, Size 010	Precision Rubber Products Company	9932	Compound 1900-X44	Lot C-3033		0/20	10	S	BT
Viton O-Rings, Size 013	Precision Rubber Products Company	9945	Compound 1900-X44	Batch 9L		2/20	10	U	BT
Viton O-Rings, Size 016	Precision Rubber Products Company	9929	Compound 1900-X44	Batch 8L		0/20	10	S	BT
Viton O-Rings, Size 017	Precision Rubber Products Company	9927	Compound 1900-X44	Cured 2nd Qtr 1967		0/20	10	S	BT
Viton O-Rings, Size 018	Precision Rubber Products Company	9925	Compound 1900-X44	Cured 2nd Qtr 1967		2/20	10	U	BT
Viton O-Rings, Size 024	Precision Rubber Products Company	9922	Compound 1900-X44	Batch 6L		0/40	10	S	BT
Viton O-Rings, Size 027	Precision Rubber Products Company	9937	Compound 1900-X44	Batch 9L		0/40	10	S	BT

TABLE IV. PLASTICS, ELASTOMERS, AND ADHESIVES (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/ No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
Viton O-Rings, Size 031	Precision Rubber Products Company	9938	Compound 1900-X44	Lot C-3024		2/20	10	U	BT
Viton O-Rings, Size 032	Precision Rubber Products Company	10002	Compound 1900-X44	Batch 9L		0/20	10	S	BT
Viton O-Rings, Size 032	Precision Rubber Products Company	9915	Compound 1900-X44	Batch 6L, 1 strip		2/20	10	U	BT
Viton O-Rings, Size 032	Precision Rubber Products Company	9915	Compound 1900-X44	Batch 6L, 7 strips		3/20	10	U	BT
Viton O-Rings, Size 034	Precision Rubber Products Company	9920	Compound 1900-X44	Batch 6L, 7 strips		0/20	10	S	BT
Viton O-Rings, Size 034	Precision Rubber Products Company	9921	Compound 1900-X44	Batch 6L, 1 strip		0/20	10	S	BT
Viton O-Rings, Size 038	Precision Rubber Products Company	10005	Compound 1900-X44	Batch 9L		2/20	10	U	BT
Viton O-Rings, Size 038	Precision Rubber Products Company	9441	Compound 1900-X44	Lot C-3027		0/20	10	S	BT
Viton O-Rings, Size 161	Precision Rubber Products Company	9954	Compound 1900-X44	Batch 6L		3/20	10	U	BT
Viton Strips	Precision Rubber Products Company	10014	Compound 17107	Batch 121464	0.070	0/20	10	S	BT
Viton Discs	Precision Rubber Products Company	10015	Compound 17107	Batch 121464	0.070	0/20	10	S	BT
Viton Sheet Material Discs	Precision Rubber Products Company	10231	Compound 1900-X44	Batch 11L	0.070	0/20	10	S	BT
Viton Sheet Material Strip	Precision Rubber Products Company	10230	Compound 1900-X44	Batch 11L	0.070	0/20	10	S	BT
Viton A Discs (New)	Precision Rubber Products Company	79135	Compound 1900-X44		0.070	2/20	10	U	BT

TABLE IV. PLASTICS, ELASTOMERS, AND ADHESIVES (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/ No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
Viton A Discs (Old)	Precision Rubber Products Company	7949	Compound 1900-X44		0.070	5/20	10	U	BT
Viton A Discs	Precision Rubber Products Company	7954	Compound 1900-X44		0.070	5/20	10	U	BT
Viton A O-Rings, A-18	Stillman Rubber Company	7916	Compound SR-277-7	Batch 61400		7/20	10	U	BT
Viton A O-Ring	Precision Rubber Company	7284				0/20	10	S	BT
		7285				0/20	10	S	BT
		7286				0/20	10	S	BT
		7287				0/20	10	S	BT
Viton A O-Ring Compound 17107A	Precision Rubber Company	7016			0.103	0/20	10	S	BT
Batch 011165		7163			0.070	0/20	10	S	BT
Batch 020865		7162			0.070	0/20	10	S	BT
Batch 040565.3		7245		Washed in F-33	0.047	0/20	10	S	BT
Batch 121464		6960			0.103	0/20	10	S	BT
Batch 121464		6959			0.139	0/20	10	S	BT
Batch 121464		6958			0.139	0/20	10	S	BT
Batch 121464		7017			0.139	0/20	10	S	BT
Viton O-Rings, Size 013	Precision Rubber Products Company	8814	Compound 17107			0/20	10	S	BT
Viton O-Rings, Size 121	Precision Rubber Products Company	8815	Compound 17107			0/20	10	S	BT
Viton O-Rings, Size 222	Precision Rubber Products Company	8816	Compound 17107			3/20	10	U	BT
Viton O-Rings, Size 228	Precision Rubber Products Company	8823	Compound 17107			4/40	10	U	BT
Viton O-Rings, Size 010	Precision Rubber Products Company	9971	Compound 19009	Cured 3rd Qtr 1967		0/40	10	S	BT
Viton O-Rings, Size 014	Precision Rubber Products Company	9790	Compound 19009	Cured 3rd Qtr 1967		0/40	10	S	BT

TABLE IV. PLASTICS, ELASTOMERS, AND ADHESIVES (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
Viton O-Rings, Size 006	Precision Rubber Products Company	9914	Compound 1900-X44	Batch 6L and 9L		7/80	10	U	BT
Viton O-Rings, Size 009	Precision Rubber Products Company	9931	Compound 1900-X44	Lot C-3019		0/20	10	S	BT
Viton O-Rings, Size 010	Precision Rubber Products Company	9999	Compound 1900-X44	Batch 9L		4/20	10	U	BT
Viton O-Rings, Size 010	Precision Rubber Products Company	9932	Compound 1900-X44	Lot C-3033		0/20	10	S	BT
Viton A on Glass Fibers 85001	E.I. du Pont de Nemours & Company, Incorporated	912			0.011	2/2 2/5 2/3	10 5 2	U	BT
Viton A on Dacron Fabric	E.I. du Pont de Nemours & Company, Incorporated	915				2/2 2/4 2/11	10 5 1	U	U
Viton A Elastomer	E.I. du Pont de Nemours & Company, Incorporated		Copolymer of vinylidene fluoride and hexafluoropropylene	Sensitivity varies from batch to batch		0-4/20	10	U	BT
X-70	Hadbar Incorporated	5424	Fluorosilicone rubber		0.125	2/20	10	U	U
X-70	Hadbar Incorporated	5425	Fluorosilicone rubber		0.100	0/20	10	U	U
X-70	Hadbar Incorporated	5426	Fluorosilicone rubber		0.033	19/20	10	U	U
X-70	Hadbar Incorporated	5352	Fluorosilicone rubber	Teflon coated	0.085	2/20 1/20	10 8	U	U
X-72	Hadbar Incorporated	5423	Fluorosilicone rubber		0.035	19/20	10	U	U
X-72	Hadbar Incorporated	5348	Fluorosilicone rubber		0.070	2/20 2/20	10 8	U	U
X-72	Hadbar Incorporated	5421	Fluorosilicone rubber		0.125	2/40	10	U	U
X-73	Hadbar Incorporated	5346	Fluorosilicone rubber		0.064	1/20 1/20	10 8	U	U

TABLE IV. PLASTICS, ELASTOMERS, AND ADHESIVES (Concluded)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/ No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
X-73	Hadbar Incorporated	5420	Fluorosilicone rubber		0.030	20/20	10	U	U
X-73	Hadbar Incorporated	5419	Fluorosilicone rubber		0.125 - 0.130	2/20	10	U	U
Compound 1200-140	Hadbar Incorporated	5350	Fluorosilicone rubber	Teflon coated	0.078	4/40 2/20	10 8	U	U
Zero Perm		5487		Stainless steel inserts used	0.003	5/20 2/20 0/20	10 8 6	U	U
XR5038	ZMCO	2748	Epoxy		0.003	2/25	10	U	U

TABLE V. GASKETS AND PACKINGS

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
Allopax No. 812	Armstrong Cork Company	1419	Teflon and asbestos		0.063	0/20	10	S	BT
Allopax No. 816	Armstrong Cork Company	1421	Teflon and asbestos	Two batches tested	0.063	0/20	10	S	BT
Allopax 500 Superheat Sheet (as received)	Allpax Company		Styrene-butadiene copolymer with asbestos fiber	Highly variable.	0.250	0-2/20	10	-	U
				Average range of test results shown for each thickness	0.125	0-3/20	10	-	U
					0.094	0-5/20	10	-	U
					0.063	3-10/20	10	-	U
					0.016	5-15/20	10	-	U
Allopax 500 Superheat Sheet (impregnated with Fluorolube T-80)	Allpax Company		Styrene-butadiene copolymer with asbestos fiber		0.250	0/20	10	S	U
					0.125	0/20	10	S	U
					0.063	0/20	10	S	U
					0.031	0-2/20	10	-	U
Allopax 500	Allpax Company	1567	Styrene-butadiene copolymer with asbestos fiber	Not Fluorolubed	0.250	30/120	10	U	U
Allopax 500	Allpax Company		Styrene-butadiene copolymer with asbestos fiber	Fluorolubed per MS 750.	0.250	0-18/20	10	-	BT
				Highly variable. Test results show range of results for each thickness	0.125	0-2/20	10	-	BT
					0.094	0-1/20	10	-	BT
					0.063	0-8/20	10	-	BT
					0.031	0-11/20	10	-	BT
Allopax 500	Allpax Company	1572	Styrene-butadiene copolymer with asbestos fiber	AR-1F treated	0.016	0-4/20	10	-	BT
Allopax 500	Allpax Company				0.250	3/40	10	U	U
Allopax 500	Allpax Company	1899		Aging test. Fluorolubed 3/9/60. Tested 3/23/61	0.250	0/20	10	S	BT
Allopax 500	Allpax Company	2004		Aging test. Fluorolubed 3/9/60. Tested 4/19/61	0.063	0/20	10	S	BT
Allopax 500	Allpax Company	3560		Aging test. Fluorolubed 3/5/60. Tested 6/13/62	0.063	0/20	10	S	BT
Allopax 500 Gasket	Chemistry Branch	3561	Fluorolubed treated per MS 750 (3/26/62)		0.063	0/20	10	S	BT

TABLE V. GASKETS AND PACKINGS (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
Ankronite 425	Anchor Packing Company	1345	Asbestos-rubber composite		0.063	0/20	10	S	BT
Annin Valve Company Valve Packing	Annin Valve Company	4489	25% fiberglass and 75% Teflon		0.050	0/20	10	S	BT
Armalon 97-001	E.I. du Pont de Nemours & Company, Incorporated	3642	0.005 in. TFE fiber, 0.005 in. FEP film		0.010	0/20	10	S	BT
Armalon PDX 7550		3517	Teflon TFE felt and FEP film		0.125	0/20	10	S	BT
Armalon No. 410-128	E.I. du Pont de Nemours & Company, Incorporated	1689	Teflon and glass		0.016	0/20	10	S	BT
Armalon Teflon Glass	E.I. du Pont de Nemours & Company, Incorporated	1674	Teflon and glass		0.016	2/2 2/5 1/13	10 5 3	U - -	U - -
Armalon	E.I. du Pont de Nemours & Company, Incorporated	762	Fluorocarbon felt	Bleached sheet	0.063	0/20	10	S	BT
Armalon	E.I. du Pont de Nemours & Company, Incorporated	1070	Fluorocarbon felt	Unbleached sheet	0.063	2/4	10	U	U
Asbestos Textile Style 3603 Sheet	Asbestos Textile Company	1343			0.063	0/20	10	S	BT
Asbestos Textile Style 3604 Sheet	Asbestos Textile Company	1344			0.063	2/20	10	U	U
Asbestos Textile Style 3605 Sheet	Asbestos Textile Company	1342			0.063	2/6 0/14	10 5	U -	U -
Asbestos from Flexitallic Gasket		2220	Asbestos	Stainless steel inserts used		0/20	10	S	BT
Asbestos Sheeting with GRS Binder	Allpax Company	2151	Asbestos and synthetic rubber	Samples from Test Division	0.063	2/120	10	-	U
Asbestos Sheeting with GRS Binder	Allpax Company	2157	Asbestos and synthetic rubber	Samples from Test Division	0.063	0/60	10	S	U
Avronite 5B7 Sheet	Kalendex Corporation	1008	Fiber coated with Buna-N		0.032	2/4 2/3 0/13	10 5 3	U - -	U - -



TABLE V. GASKETS AND PACKINGS (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/ No. Tests	Energy Level K g/m	Batch or Jar Rating	Material Rating
Avronite Sheet 5B10	Kalendex Corporation	993	Fiber core coated with Buna-N		0.093	2/3 2/2 2/4	10 5 3	U — —	U — —
Avronite Sheet 5B20	Kalendex Corporation	922	Fiber core coated with Buna-N		0.063	2/2 2/3 0/15	10 5 3	U — —	U — —
Avronite Sheet 10B20	Kalendex Corporation	991	Fiber core coated with Buna-N		0.063	2/2 2/2 2/3	10 5 3	U — —	U — —
Carbon Seal		6648		Stainless steel cups	0.134	0/20	10	S	BT
Carbon Seal from Bingham LOX Pump Seal, MOD-CADS		5931		No stainless steel inserts	0.062	0/20	10	S	BT
Carbon Seal from Bingham LOX Seal, MOD-CADS		5932		Stainless steel inserts	0.062	0/20	10	S	BT
Carbon Seal from Bingham LOX Seal, MOD-CADS		5930		Fragments from previous impact tests		10/20	10	U	BT
Carbon Seal from Bingham LOX Seal, MOD-CADS		5929		Ground to powder in a Wiley Mill		5/20	10	U	BT
Chesterton Packing No. 324	A. W. Chesterton Company	2911		Very violent reaction	0.250	1/1 1/1	10 5	U —	U —
Convair Gasket, Green	Convair Division General Dynamics Incorporated	1285	Metal gasket with green coating		0.063	2/2 0/18	10 5	U —	U —
Convair Gasket, Brown	Convair Division General Dynamics Incorporated	1280	Metal gasket with brown coating		0.062	0/20	10	S	BT
Extruded Cryal "S"	Johns-Manville Company	4517	Filled Teflon		0.063	0/20	10	S	BT
Extruded Cryal "M"	Johns-Manville Company	4518	Filled Teflon		0.063	0/20	10	S	BT
Durabla Gasket Material	Durabla Manufacturing Company	2491	Compressed asbestos and fluorosilicone rubber	Sensitivity varies from batch to batch	0.063	3/40 0/20	10 2	U —	BT BT

TABLE V. GASKETS AND PACKINGS (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/ No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
Durabla Gasket Material	Durabla Manufacturing Company	3506	Compressed asbestos and fluorosilicone rubber	Sensitivity varies from batch to batch	0.032	2/8 2/19 0/20	10 5 3	— — —	BT
Duroid Sheet 900	Rogers Corporation	1346	Cellulose fibers and Buna-N		0.032	2/2 2/2 2/16	10 5 3	U — —	U
Duroid Sheet 910	Rogers Corporation		Similar to Duroid 900		0.032	2/2 2/2 2/16	10 5 3	U — —	U
Duroid Sheet 3102	Rogers Corporation	1347	Neoprene latex and asbestos fibers	Conforms to (MIL-G-7021 Class 2)	0.032	2/3 2/2 0/14	10 5 3	U — —	U
Duroid Sheet 3110	Rogers Corporation	1349	Similar to Duroid 3102		0.032	2/2 2/2 1/16	10 5 3	U — —	U
Duroid Sheet 3200	Rogers Corporation	1351	Buna-N latex and asbestos fibers		0.032	2/2 2/2 2/3	10 5 3	U — —	U
Duroid Sheet 3210	Rogers Corporation	1352	Similar to Duroid 3200		0.032	2/2 2/2 2/16	10 5 3	U — —	U
Duroid Sheet 3300	Rogers Corporation	1353	Buna-S and asbestos fibers		0.032	2/2 2/2 0/16	10 5 3	U — —	U
Duroid Sheet 3310	Rogers Corporation	1354	Similar to Duroid 3300		0.032	2/3 2/3 0/14	10 5 3	U — —	U
Duroid Sheet 3350	Rogers Corporation	1355	Similar to Duroid 3300		0.063	2/2 2/6 0/11	10 5 3	U — —	U
Duroid Sheet 3400	Rogers Corporation	1473	Viton A and asbestos fibers		0.063	0/20	10	S	BT

TABLE V. GASKETS AND PACKINGS (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/ No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
Duroid Sheet 5600	Rogers Corporation	480	Teflon and ceramic fibers		0.063	0/20	10	S	BT
Duroid Sheet 5613	Rogers Corporation	492	Similar to Duroid 5600; contains molybdenum disulfide		0.063	2/6 0/14	10 2	U	BT
Duroid Sheet 5650	Rogers Corporation	481	Similar to Duroid 5600; has higher Teflon content		0.063	0/20	10	S	BT
"E" Felt	Unit Cork Company	709			0.063	2/20	10	U	U
FEP on Surface of Glass Fabric	Non-Metallic Materials Branch	7567 7568		Stainless steel inserts	0.060 0.050	0/20 0/20	10 10	S S	BT BT
Flexrock Type 420 Packing, SPT-13-64	Flexrock Company	5968			0.25	0/20	10	S	BT
SPT-14-64		5967			0.25	0/20	10	S	BT
SPT-15-64		5966			0.25	0/20	10	S	BT
SPT-16-64		5953			0.25	0/20	10	S	BT
SPT-17-64		5952			0.25	0/20	10	S	BT
SPT-18-64		5951			0.25	0/20	10	S	BT
Flexitallic Gasket	Flexitallic Gasket Company	348	Stainless steel and Teflon		0.063	0/20	10	S	BT
Flexitallic Gasket	Flexitallic Gasket Company	349	Stainless steel and blue asbestos		0.063	0/20	10	S	BT
Flexrock 420 Packing	Flexrock Company	2887	Braided Teflon		0.250	0/20	10	S	BT
Flexrock 420 Packing	Flexrock Company	2886	Braided Teflon		0.500	0/40	10	S	BT
Flexrock 420 Packing	Flexrock Company	2376	Braided Teflon	Stainless steel inserts used	0.188	0/20	10	S	BT
Flexrock 420 Packing	Flexrock Company	2377	Braided Teflon	Stainless steel inserts used	0.313	0/20	10	S	BT
Flexrock 420 Packing	Flexrock Company	2880	Braided Teflon		0.125	0/40	10	S	BT
Flexrock 420 Packing	Flexrock Company	2884	Braided Teflon		0.375	0/40	10	S	BT

TABLE V. GASKETS AND PACKINGS (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/ No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
Fluorobestos LS-7598	Raybestos-Manhattan Inc.	2068	Teflon and asbestos		0.030	0/20	10	S	BT
Fluorobestos, Unsintered	Raybestos-Manhattan Inc.	1918	Teflon and asbestos		0.063	0/20	10	S	BT
Fluoroblu Sheet	John L. Dore Company	1391	Compounded Teflon		0.063	0/20	10	S	BT
Fluoroblack Sheet	John L. Dore Company	1312	Compounded Teflon		0.063	0/20	10	S	BT
Fluorobrown	John L. Dore Company	1393	Reprocessed filled Teflon		0.063	0/20	10	S	BT
Fluorogold Gasket Material	Fluorocarbon Products Company	3336	Chlorofluorocarbon		0.125	0/20	10	S	BT
Fluorogreen E-600	John L. Dore Company	3372	Teflon and inorganic filler	Seven different batches tested	0.063	0/40	10	S	S
Fluorogreen E-600	John L. Dore Company	2066	Teflon and inorganic filler	Seven different batches tested	0.063	0/20	10	S	S
Fluorogreen E-600, (12 sheets)	John L. Dore Company	5818		Stainless steel inserts 6 sheets at 0.062 inch Stainless steel inserts 6 sheets at 0.125 inch		0/20	10	S	S
SPT-1 through SPT-12						0/20	10	S	S
Fluorogreen E-600, SPT 3-65 through SPT 26-65 (24 sheets)	John L. Dore Company	6495		7 sheets at 0.062 inch 1 sheet at 0.065 inch 1 sheet at 0.066 inch 1 sheet at 0.072 inch 1 sheet at 0.080 inch		0/20 0/20 0/20 0/20 0/20	10 10 10 10 10	S S S S S	S S S S S
Fluorogreen E-600 SPT 3-65 through SPT 26-65	John L. Dore Company	6495		2 sheets at 0.120 inch 6 sheets at 0.125 inch 1 sheet at 0.130 inch 1 sheet at 0.132 inch 1 sheet at 0.135 inch 1 sheet at 0.150 inch		0/20 0/20 0/20 0/20 0/20 0/20	10 10 10 10 10 10	S S S S S S	S S S S S S
Fluorogreen E-600 (30 sheets) SPT 27-65 through SPT 56-65	John L. Dore Company	7104		Wash with F-33 2 sheets at 0.060 inch 2 sheets at 0.062 inch 5 sheets at 0.063 inch 4 sheets at 0.064 inch 1 sheet at 0.065 inch		0/20 0/20 0/20 0/20 0/20	10 10 10 10 10	S S S S S	S S S S S

TABLE V. GASKETS AND PACKINGS (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/No. Tests	Energy Level, kg/m	Batch or Jar Rating	Material Rating
Fluorogreen E-600 (continued)	John L. Dore Company	7104		3 sheets at 0.066 inch 3 sheets at 0.066 inch 1 sheet at 0.070 inch 1 sheet at 0.115 inch 3 sheets at 0.125 inch 1 sheet at 0.126 inch 1 sheet at 0.127 inch 1 sheet at 0.128 inch 1 sheet at 0.129 inch 2 sheets at 0.135 inch 1 sheet at 0.136 inch 1 sheet at 0.138 inch		0/20 0/20 0/20 0/20 0/20 0/20 0/20 0/20 0/20 0/20 0/20 0/20	10 10 10 10 10 10 10 10 10 10 10 10	S S S S S S S S S S S S	S S S S S S S S S S S S
Fluorogreen E-600	John L. Dore Company	69043			0.070	0/20	10	S	S
Fluorogreen Gasket No. 10426445	John L. Dore Company	4375		Fluorogreen E-600	0.063	0/20	10	S	S
Fluorocarbon Standard "O" Rings	The Fluorocarbon Company	4803				0/20	10	S	BT
Fluoro-Ray	Raybestos-Manhattan Company	9775	Carbon-filled Teflon	Three batches tested	0.025	2-4/20	10	U	BT
Fluoro-Ray Blue Ceramic-Filled Teflon	Raybestos-Manhattan	4588		Stainless steel inserts	0.063	0/20	10	S	BT
Garlock 605 Sheet	Garlock Packing Company	1230	Wire Reinforced asbestos		0.063	2/2 2/5 0/13	10 5 2	U - -	U - -
Garlock 900 Sheet	Garlock Packing Company	315	Asbestos-rubber composite		0.063	2/2 2/3 2/4	10 5 2	U - -	U - -
Garlock 3875 SPT-1964 SPT-1964 SPT-2048	Garlock, Incorporated	5939	Asbestos and Teflon		0.375 0.50 0.50	0/20 0/20 0/20	10 10 10	S S S	BT BT BT
Garlock 7071 Sheet	Garlock Packing Company	1231	Asbestos-rubber composite	Violent reactions	0.063	2/2 2/3 2/3 0/2	10 5 2 1	U - - -	U - - -
Garlock 1228 Sheet	Garlock Packing Company	1395	Asbestos Neoprene rubber		0.063	2/2 0/14	10 5	U -	U -

TABLE V. GASKETS AND PACKINGS (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/ No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
Garlock 7705 Sheet	Garlock Packing Company	1229	Blue asbestos-rubber composite	Violent reactions	0.063	2/2 2/2 2/2 1/2	10 5 2 1	U - - -	U - - -
Garlock 8573	Garlock Packing Company	8600	Filled Teflon	Three batches tested	0.092	0/20	10	S	BT
Garlock 8573 Sheet	Garlock Packing Company	3321	Glass-filled Teflon		0.063	0/20	10	S	BT
Gatke Buna-PAK I-26 Sheet	Gatke Corporation	1340	Compressed asbestos with binder		0.063	2/20 0/10	10 5	U	U
Gyton S-50-S	Garlock Packing Company	10265	Filled Teflon		0.100	0/20	10	S	BT
John Crane Style C-30 Packing	Crane Packing Company	442	Braided Teflon		0.250	0/20	10	S	BT
John Crane Style C-30 Packing	Crane Packing Company	2910	Braided Teflon		0.250	0/20	10	S	BT
John Crane Style C-94 Packing	Crane Packing Company	2909	Braided asbestos lubricated with Teflon suspension		0.025	0/20	10	S	BT
John Crane Style 17717 Packing	Crane Packing Company	839	Braided asbestos over graphitized asbestos core	Sensitivity varies from batch to batch	0.250	0/20	10	S	BT
John Crane Style 333 Sheet	Crane Packing Company	1199	Compressed asbestos with binder		0.063	4/20	10	U	U
John Crane Style 444 Sheet	Crane Packing Company	1211	Chemically treated compressed vegetable plant fiber		0.063	2/4 0/16	10 5	U -	U -
John Crane Style 888 Sheet	Crane Packing Company	1213	Compressed asbestos with oil resistant binder		0.063	2/20	10	U	U
John Crane Style 2150 Sheet	Crane Packing Company	1214	Asbestos with heat resisting binder		0.063	2/3 2/17	10 5	U -	U -
John Crane Style 2151 Sheet	Crane Packing Company	1212	Similar to Style 2150		0.063	2/2 2/4 0/4	10 5 3	U - -	U - -

TABLE V. GASKETS AND PACKINGS (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/ No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
Johns-Manville No. 60 Sheet	Johns-Manville Company		Compressed asbestos with binder	Variable	0.063	0-2/20	10	-	BT
Johns-Manville No. 61 Sheet	Johns-Manville Company	1652			0.063	3/9 3/11	10 5	U	U
Johns-Manville No. 76 Sheet	Johns-Manville Company	1360	Compressed asbestos with binder	Variable	0.063	0-5/20	10	-	BT
Johns-Manville No. 76 Sheet	Johns-Manville Company	1474 1922	Compressed asbestos with binder	Sensitivity varies from batch to batch	0.063	0/20 0/20	10 10	S S	BT BT
Johns-Manville No. 76 Sheet	Johns-Manville Company	1926 1925	Compressed asbestos with binder		0.032	2/5 2/5	10 10	U U	U U
Johns-Manville No. 84 Sheet	Johns-Manville Company	1653			0.063	2/2 2/2 2/2	10 5 3	U - -	U - -
Johns-Manville Style 91 Sheet	Johns-Manville Company	1059	Chrysotile asbestos cloth with Teflon suspensoid		0.063	2/3 0/17	10 5	U -	U -
Johns-Manville Style 92 Sheet	Johns-Manville Company	1203	Crocidolite asbestos cloth with Teflon suspensoid		0.063	2/2 2/2 0/16	10 5 2	U - -	U - -
Johns-Manville No. 219 Sheet	Johns-Manville Company	1649			0.063	2/3 0/11	10 5	U -	U -
Johns-Manville Lo Flo Sheet	Johns-Manville Company	1673	Teflon reinforced with glass fiber		0.032	0/20	10	S	BT
Johns-Manville Lo Flo Sheet	Johns-Manville Company	1673	Teflon ground glass		0.063	0/20	10	S	BT
Johns-Manville Style 2024 Packing	Johns-Manville Company	1585		Formerly known as Johns-Manville MX 3684 Packing	0.250	2/4 1/16	10 5	-	U
Johns-Manville MX 3681	Johns-Manville Company	1589	Compressed asbestos with binder	Variable	0.500	0/20	10	S	BT

TABLE V. GASKETS AND PACKINGS (Continued).

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/No. Tests	Energy Level Kg/in	Batch or Jar Rating	Material Rating
Johns-Manville MX-3681	Johns-Manville Company		Compressed asbestos with binder	Variable	0.375	0-13/20	10	-	U
Johns-Manville MX-3681	Johns-Manville Company		Compressed asbestos with binder	Variable	0.313	5-13/20	10	U	U
Johns-Manville MX-3681	Johns-Manville Company		Compressed asbestos with binder	Variable	0.250	20-5/20	10	-	U
Johns-Manville MX-3681	Johns-Manville Company		Compressed asbestos with binder		0.188	26/40 5/60	10 5	-	U
Johns-Manville MX-3681	Johns-Manville Company	1944	Compressed asbestos with binder	Variable	0.125	3-7/20	10	U	U
Kel-F Elastomer Gasket 3-5986-1	Arrowhead Products	6450		Stainless steel inserts		0/20	10	S	BT
Kel-F Elastomer Gasket 3-5986-3	Arrowhead Products	6451		Stainless steel inserts	0.039	0/20	10	S	BT
Kel-F Lip Seal, QR 717A, Lot A31584	W.S. Shumblée Company	6373		Stainless steel inserts	0.128	0/20	10	S	BT
Heat Cleaned Glass Fabric		7566		Stainless steel inserts	0.010	0/20	10	S	BT
K&M 238 Sheet	Kearby and Mattison Company	1332			0.063	2/4 0/11	10 5	U	U
K&M 239 Sheet	Kearby and Mattison Company	1333	Asbestos with GR-5 elastomer	Meets MIL-A-17472	0.063	4/20	10	U	U
Leather Chrome-Tanned	Obtained from Bell Aircraft Company	1201	Leather	Violent explosions	0.125	2/5 2/7	10 5	U	U
Leather, Chrome-Tanned, Fluorolube Impregnated	Bell Aircraft Company ("Turkhide")	1202			0.125	0/20	10	-	U
Naflex Seal with Teflon Tape and Adhesive	Rocketdyne	3696	Teflon, silicone adhesive	Seven batches tested (typical data)	0.060	2/4 2/2 2/12 0/20	10 5 3 1	U	U
Narmco Seal, Serial No. 003	Narmco Research and Development Company	10041	TFE-FEP	Stainless steel inserts	0.125	0/20	10	S	S
Serial No. 006		7570	TFE-FEP fiberglass	Stainless steel inserts	0.100	0/20	10	S	S
		7571	Teflon-fiberglass	Stainless steel inserts	0.100	0/20	10	S	S



TABLE V. GASKETS AND PACKINGS (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/ No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
Serial No. 016	Raybestos-Manhattan Company	7582	Teflon-fiberglass	Stainless steel inserts	0.100	0/20	10	S	S
Serial No. 017		7583	Teflon-fiberglass	Stainless steel inserts	0.100	0/20	10	S	S
Serial No. 018		7584	Teflon-fiberglass	Stainless steel inserts	0.100	0/20	10	S	S
Serial No. 061		7585	Teflon-fiberglass	Stainless steel inserts	0.100	0/20	10	S	S
Serial No. 064		7642	Teflon-fiberglass	Stainless steel inserts	0.11	0/20	10	S	S
Serial No. 065		7643	Teflon-fiberglass	Stainless steel inserts	0.10	0/20	10	S	S
Serial No. 066		7644	Teflon-fiberglass	Stainless steel inserts	0.11	0/20	10	S	S
Serial No. 070		7645	Teflon-fiberglass	Stainless steel inserts	0.10	0/20	10	S	S
Novabestos 7511T	Raybestos-Manhattan Company	6277	Dispersed asbestos TFE fiber paper	Cleaned per MSFC-SPEC-106B	0.50	0/20	10	S	BT
Novabestos 7511T		4837	Dispersed asbestos TFE fiber paper	Cleaned per MSFC-SPEC-106B	0.020	0/20	10	S	BT
Novabestos 7511T		2729	Dispersed asbestos fiber paper		0.020	0/20	10	S	BT
Novabestos 7711T		5979 5978	Dispersed asbestos fiber paper	Stainless steel inserts	0.020 0.030	0/20 0/20	10 10	S S	BT BT
Mylar Seat Assembly Gasket	Hadley Valve Company	5586			0.008	16/20	10	U	U
"O" Ring 2 pc 29513-231-1000-80 on Mark Couplings		5189	Fluorosilicone		0.131	20/20 11/14	10 8	U	U
Quinorgabond	Johns-Manville Company	4516	Asbestos-Rubber Composite		0.125	0/20	10	S	BT
Parco O-ring Sheet No. 945-70	Plastic and Rubber Products Company		Fluorinated elastomer		0.063	0/20	10	S	BT
Raybestos-Manhattan Fluorobestos Sheet	Raybestos-Manhattan Company	1918	Teflon impregnated asbestos	Available as special LOX grade	0.063	0/20	10	S	BT
Raybestos-Manhattan K-68 Sheet	Raybestos-Manhattan Company	1924	Asbestos with sulfur- free neoprene binder		0.063	0/20	10	S	BT
Raybestos-Manhattan K-68 Sheet	Raybestos-Manhattan Company	1923	Asbestos with sulfur- free neoprene binder		0.094	4/20	10	U	U
Raybestos-Manhattan 655 Sheet	Raybestos-Manhattan Company	1209			0.063	2/8 1/12	10 8	U	U

TABLE V. GASKETS AND PACKINGS (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/ No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
Raybestos-Manhattan 670 Sheet	Raybestos-Manhattan Company	1140		Violent reactions.	0.063	2/4 2/3 2/5	10 8 2	U - -	U - -
Raybestos-Manhattan 673 Sheet	Raybestos-Manhattan Company	1207			0.063	2/4 1/16	10 8	U -	U -
Raybestos-Manhattan 10,000 Sheet	Raybestos-Manhattan Company	1069	Crude asbestos fibers with binder		0.063	2/2 2/2	10 8	U -	U -
Raybestos-Manhattan RL-395	Raybestos-Manhattan Company	2067	Teflon asbestos cloth		0.063	0/20	10	S	BT
Raybestos-Manhattan RL-80	Raybestos-Manhattan Company	2474	Teflon impregnated asbestos cloth	RM-607	0.125	0/40	10	S	BT
Raybestos-Manhattan RL-80	Raybestos-Manhattan Company	2476	Teflon impregnated asbestos cloth	RM-607	0.063	0/40	10	S	BT
Raybestos-Manhattan RL-1356	Raybestos-Manhattan Company	2069	Asbestos sheet with 0.009 in. Teflon film		0.063	0/20	10	S	BT
L-2094-1 Gasket	Raybestos-Manhattan Company	5804		Stainless steel inserts	0.080	15/20 7/20 6/20	10 8 6	U U U	U U U
Packing P/N 00526-78	Annin Packing Company	5969			0.275	5/20	10	U	U
RL-1355	Raybestos-Manhattan Company	5803		Stainless steel inserts	0.080	10/20 3/20 0/20	10 8 6	U U U	U U U
RL-1735	Raybestos-Manhattan Company	5810		Stainless steel inserts	0.060	9/20 2/20 0/20	11 10 8	U U U	U U U
RM 10-M-351	Raybestos-Manhattan Company	5949			0.074	0/20	10	S	BT
RM 10-M-351, Aluminized	Raybestos-Manhattan Company	5950		Stainless steel inserts	0.082	0/20	10	S	BT
RM 121-370	Raybestos-Manhattan Company	5948			0.077	0/20	10	S	BT
RM 827-M-B	Raybestos-Manhattan Company	5909		Stainless steel inserts	0.060	0/20	10	S	BT
Rulon A	Dixon Corporation	9131	Filled Teflon		0.063	0/20	10	S	S

TABLE V. GASKETS AND PACKINGS (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/ No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
Sacoma 715 Packing	American Asbestos Company	556		Variable	0.250	0-2/20	10	—	U
Sepco 200 Gasket	Southern Products Corporation	4801			0.063	2/4 2/20	10 5	U	U
Teflon Gasket		7553	Virgin Teflon		0.107	0/20	10	S	S
Tetrabest Gasket Seal Carter P/N 3913	Anchor Packing Company	6828			0.020	0/20	10	S	BT
Teflon-Coated Viton "O" Rings	Hadbar Incorporated	5215	No. 954-70 Viton and Teflon coat	Stainless steel inserts used		0/20	10	S	BT
Teflon-Coated Naflex Seal AMS4340		4812	Virgin Teflon			0/40	10	S	BT
EOR 76574-3 Teflon-coated Naflex gasket	Orbit Machine Corporation	2383			0.063	2/20	10	U	BT
EOR 76574-5 Teflon-coated Naflex gasket	Orbit Machine Corporation	2384			0.063	5/20	10	U	BT
Teflon TFE Filled with 25% Glass	Arrowhead Products	5050	Teflon TFE-75% Glass-25%		0.050	0/20	10	S	BT
Teflon Lip Seal	Hadley Valve Company	5587	Virgin Teflon		0.180	0/20	10	S	BT
Tetrabest	Anchor Packing Company	5491	Asbestos and Teflon		0.021	0/20	10	S	BT
Viton A "O" Ring		4370			0.063	0/20	10	S	BT
Viton A "O" Ring PN7170-19009 Compound 19009		5313			0.110	0/20	10	S	BT
Viton A "O" Ring		5312			0.133	0/20	10	S	BT
Viton A "O" Ring HS8-513-111	B.H. Hadley Incorporated	5384			0.093	0/20	10	S	BT
Viton A "O" Ring HS8-513-232	B.H. Hadley Incorporated	5383			0.031	0/20	10	S	BT
Viton A "O" Ring	B.H. Hadley Incorporated	5385			0.040	0/20	10	S	BT
Viton A "O" Ring VLF34 for replenishing Tank Safety Head	Hadbar Incorporated	5513			0.268	0/20	10	S	BT

TABLE V. GASKETS AND PACKINGS (Concluded)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/ No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
Viton A "O" Ring VLF34 for LOX System	Hadbar Incorporated	5514			0.266	0/20	10	S	BT
Viton A 3Q63-MS29513-255	Du Pont	5062			0.125	0/20	10	S	BT

TABLE VI. METALS, ALLOYS, AND SURFACE TREATMENTS

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
Aluminum Alloy 1100-0"		11447			0.032	0/20	10	S	S
Aluminum Alloy 1100-0"		11448			0.063	0/20	10	S	S
Aluminum Alloy 2014-T6		3110			0.010 0.010	0/100 0/100	10 5	S —	S —
Aluminum Alloy 2014-T6		3084			0.025 0.025	0/120 0/100	10 5	S —	S —
Aluminum Alloy 2014 T6		2969 2854			0.063 0.063 0.063	1/100 0/100 0/100	10 10 5	S S —	S S —
Aluminum Alloy 2024-T6-Alodine 1200	American Chemical Paint Co.	957			0.063	0/20	10	S	S
Aluminum Alloy 2024-T3 Anodized, Sandoz Blue B	Sandoz Chemical Co.	491	MIL-A-8625A Type II Nickel Acetate Sealed		0.081	0/20	10	S	S
Aluminum Alloy 2024-T3		11444			0.032	0/20	10	S	S
Aluminum Alloy 2024-T3		11445			0.063	0/20	10	S	S
Aluminum Alloy 2024-T3		11446			0.090	0/20	10	S	S
Aluminum Alloy 2024-T3 Anodized, Sandoz Green AX	Sandoz Chemical Co.	490	Nickel Acetate Sealed MIL-A-8625A, Type II		0.063	0/20	10	S	BT
Aluminum Alloy 2219-T87		3616			0.094	0/20	10	S	S
Aluminum Alloy 2219-T37 Iridite 14-4 Coated		6003			0.063	0/20	10	S	S
Aluminum Alloy 5052-H32-LOX Test Cups		1511		LOX test cups	0.063	0/20	10	S	S
Aluminum Alloy 5052-H32-LOX Test Cups		6973		Vapor, degreased, alkaline cleaned and acid etched	0.063	0/20	10	S	S
Aluminum Alloy 5052-H32-LOX Test Cups		9116		Vapor, degreased, alkaline cleaned and acid etched	0.063	0/20	10	S	S

TABLE VI. METALS, ALLOYS, AND SURFACE TREATMENTS (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/ No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
Aluminum Alloy 5052-H32-Iridite 14-2 Coated		2826			0.063	0/20	10	S	S
Aluminum Alloy 5052-Iridite 14-2 Coated		572			0.063	0/20	10	S	S
Aluminum Alloy 5086-H34		2869		Hand deburred	0.063	1/147 0/80	10 5	S	S
Aluminum Alloy 5086		506			0.063	0/20	10	S	S
Aluminum Alloy 5086-H34-Alodine 1200 Coated		958	Nickel-Acetate sealed		0.063	0/20	10	S	S
Aluminum Alloy 5086 - Iridite-Gold		500			0.063	2/24 1/20	10 8	U	BT
Aluminum Alloy 5456-M343		2771			0.063 0.063	1/120 0/80	10 5	S	S
Aluminum Alloy 6061-T6		5511		Samples, striker & anvil not precooled	0.063	0/20	10	S	S
Aluminum Alloy 6061-T6		5512		Samples precooled	0.063	0/20	10	S	S
Aluminum Alloy 6061-T6 Sulfuric Acid Anodized		8601		Not sealed	0.063	0/100	10	S	BT
Aluminum Alloy 6061-T6 Anodized, Sandoz Gold	Sandoz Chemical Co.	9209	MIL-A-8625A Type II Nickel acetate sealed		0.063	0/60	10	S	BT
Aluminum Alloy 6061-T6-Anodized Sandoz Yellow	Sandoz Chemical Co.	9205	MIL-A-8625A Type II Nickel acetate sealed		0.063	0/60	10	S	BT
Aluminum Alloy 6061-T6-Anodized, Sandoz Black BK	Sandoz Chemical Co.	999	MIL-A-8625A Type II Nickel acetate sealed		0.063	0/20	10	S	BT
Aluminum Alloy 6061-T6-Anodized, Sandoz Blue B	Sandoz Chemical Co.	1737	MIL-A-8625A Type II Nickel acetate sealed		0.063	3/40	10	U	BT
Aluminum Alloy 6061-T6 Anodized, Sandoz Green AX	Sandoz Chemical Co.	1000	MIL-A-8625A Type II Nickel acetate sealed		0.063	0/20	10	S	BT

TABLE VI. METALS, ALLOYS, AND SURFACE TREATMENTS (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/ No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
Aluminum Alloy 6061-T6 Iridite 14-2 Coating	Associated Products Lab.	7918			0.063	0/20	10	S	S
Aluminum Alloy 6061-T6 Iridite 14-2 Coating	Allied Research Product	1002	Nickel acetate sealed		0.063	0/20	10	S	S
Aluminum Alloy 6061-T6-Alodine MTL Modified 401-45	Metallic Materials Branch	9903	Applied to 0.063 discs		0.005	0/20	10	S	BT
Aluminum Alloy 6061-T6 Alodine 1200S		11402			0.063	0/20	10	S	S
Aluminum Alloy Tens-50		11450			0.125	0/20	10	S	S
Aluminum Alloy Tens-50		11453			0.032	0/20	10	S	S
Aluminum Foil	Kaiser-Aluminum Co.	7726			0.001	0/20	10	S	S
Aluminum Black Magic No. 1	Metallic Materials Branch	9799	Applied to 2 mil aluminum		0.001	4/20	10	U	BT
Aluminum Black Swab No. A-14	Metallic Materials Branch	9805	Conversion coating on 2 mil aluminum foil		0.001	0/20	10	S	BT
Alpha 238 Solder	Alpha Metals Inc.					2/3 9/17	10 5	U	U
Alpha 10/88/2 AG Solder	Alpha Metals Inc.	7651			0.025	2/20	10	U	U
Ampco 2013 (filings)	Metallic Materials Branch	4401	10% tin, 88% lead 2% silver	In stainless steel cups	—	0/20	10	S	S
Ampco 2013 (filings)	Metallic Materials Branch	4402		In aluminum cups	—	0/20	10	S	S
Ampco 2013		4399			0.032	0/20	10	S	S
Ampco-24 Alloy		3481	5% iron, 15% aluminum 80% copper		0.063	0/20	10	S	S
Barium metal plus copper oxide	Space Div., NAR Corp.	MC-1483	1.16 gms barium 0.3875 gm copper oxide			0/20	10	S	—

TABLE VI. METALS, ALLOYS, AND SURFACE TREATMENTS (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (in.)	No. Reactions/ No. Tests	Energy Level Kg/in	Batch or Jar Rating	Material Rating
Aluminum Alloy 6061-T6, Anodized Sandoz Yellow 2D	Sandoz Chemical Co.	1735	MIL-A-8625A Type II Nickel acetate sealed		0.063	0/20	10	S	BT
Aluminum Alloy 6061-T6, Anodized Sandoz Black V-Orange 3A	Sandoz Chemical Co.	1733	MIL-A-8625A Type II Nickel acetate sealed		0.063	4/20	10	U	BT
Aluminum Alloy 6061-T6, Anodized Sandoz Gold (Black V, Orange 3A)	Sandoz Chemical Co.	1841	MIL-A-8625A Type II Nickel acetate sealed		0.063	0/20	10	S	BT
Aluminum Alloy 6061-T6 - Treated	Sandoz Chemical Co.	584		soaked 24 hours in 4.1% sulfuric acid followed by 24 hours in 0.2% sodium dichromate	0.063	0/20	10	S	BT
Aluminum Alloy 6061-T6-Anodized Sandoz 00319	Sandoz Chemical Co.	1726	MIL-A-8625A Type II Nickel acetate sealed		0.063	5/40	10	U	BT
Aluminum Alloy 6061-T6, Anodized Sandoz Bordeaux Red	Sandoz Chemical Co.	1847	MIL-A-8625A Type II Nickel acetate sealed		0.063	0/20	10	S	BT
Aluminum Alloy 6061-T6, Anodized Sandoz Orange 2B	Sandoz Chemical Co.	1846	MIL-A-8625A Type II Nickel acetate sealed		0.063	0/20	10	S	BT
Aluminum Alloy 6061-T6-Anodized Cyanamide Black WA	American Cyanamid	1842	MIL-A-8625A Type II Nickel acetate sealed		0.063	0/20	10	S	BT
Aluminum Alloy 6061-T6 Anodized Eaton Scarlet	Eaton Chemical Co.	998	MIL-A-8625A Type II Nickel acetate sealed		0.063	0/20	10	S	BT
Aluminum Alloy 6061-T6 Anodized Black	Eaton Chemical Co.	3165	MIL-A-8625A Type II Nickel acetate sealed		0.063	2/20 1/20	10 5	U	-BT
Aluminum Alloy 6061-T6 Anodized Krieger 15285	Krieger Color & Chemical Co.	1732 1895	MIL-A-8625A Type II Nickel acetate sealed		0.063 0.063	3/20 0/20	10 10	U S	BT BT
Aluminum Alloy 6061-T6 Anodized Krieger Blue B	Krieger Color & Chemical Co.	1734 1844	MIL-A-8625A Type II Nickel acetate sealed		0.063 0.063	1/40 1/40	10 10	I I	BT BT
Aluminum Alloy 6061-T6 Indite 14-2 Coating		3851			0.063	0/20	10	S	BT



TABLE VI. METALS, ALLOYS, AND SURFACE TREATMENTS (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/ No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
Berylo 25 (4485, 1/2 hard, NAS-8672)		6639			0.052	0/20	10	S	S
Beryllium		3125			0.063	0/20	10	S	S
Beryllium Copper Alloy 25	Brush Beryllium Company	9411			0.063	0/20	10	S	S
Bronze Filter, Sintered		2517			0.060	0/20	10	S	S
Brass Inserts		3016	65% copper, 34% zinc, 2%		0.063	0/20	10	S	S
Cadmium		1902		Electroplated	0.001	0/20	10	S	S
Carboloy No. 608 Coated with Everlube 811	Haward Corporation	4398	Chrome carbide coated on one side with Everlube 811 Dry Lubricant		0.063	0/20	10	S	S
Carboloy No. 883 Coated with Everlube 811	Haward Corporation	4397	Tungsten carbide coated with Everlube 811 on one side		0.063	0/20	10	S	S
Cerrobend Low Melting Alloy		852	Contains bismuth, lead, tin	Low melting alloy	0.063	2/3 1/17	10 5	U	U
Cherry Lock Rivet, NAS-1398 D5-4, D5-Z	Cherry Rivet Company	5677	Coated with dry film lube C-23			7/20	10	U	U
Cherry Lock Rivet NAS-1398, D5-3	Cherry Rivet Company	5678	Coated with dry film lube C-23			3/20	10	U	U
Copper Wire		9140			0.005	0/20	10	S	S
CN-346 Copper Nickel Alloy	International Nickel Co.	3849	70% copper, 30% nickel		0.050	0/20	10	S	S
Chromium		1896		Electroplated	0.5 mil	0/20	10	S	S
Columbium	Space Division, NAR	ME659				0/20	10	S	BT
Durlite Black Oxide	Durlite Company	9369			0.001	0/20	10	S	BT
Dutch Boy Resin Solder	National Lead Company	5686	40% tin/60% lead		0.010	12/20 9/20 7/20 4/20 2/20 0/20	10 8 6 4 2 1	U	U

TABLE VI. METALS, ALLOYS, AND SURFACE TREATMENTS (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/ No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
Dutch Boy Fluxrite Solder	National Lead Company	5687	60% tin/40% lead with NUAX Flux		0.014	20/20 17/20 17/20 12/20 5/20 0/20	10 8 6 4 2 1	U - - - - -	U - - - - -
Easy Flo-Solder		5693	High silver content		0.005	0/20 0/20	11.3 10	S S	BT BT
EZ Fo Alloy AMS 4771	Rocketdyne	463-25C			0.005	0/20	10	S	BT
Ersins S Core Solder, Non-Corrosive Flux	Ersin Multicore Solder Limited	5695	60% tin/40% lead		0.005	14/20 12/20 7/20 7/20 5/20 0/20	10 8 6 4 2 1	U - - - - -	U - - - - -
Eutectic No. 151B Solder	Eutectic Welding Alloy Corporation	3534	90% tin, zinc, nickel		0.032	10/20 3/20 0/20	10 4 2	U - -	U - -
Eutectic No. 153 Solder	Eutectic Welding Alloy Corporation	3538	90% lead, 10% silver		0.032	3/20 2/22 0/20	10 7 5	U - -	U - -
Eutectic No. 155 Solder	Eutectic Welding Alloy Corporation	3541			0.032	2/35 2/20	10 8	U -	U -
Eutectic 157 Solder	Eutectic Welding Alloy Corporation	705		Low melting alloy	0.050	3/4 2/3 2/3 0/6	10 5 3 6	U	U
Eutectic 1800 Solder	Eutectic Welding Alloy Corporation	757			0.050	0/20	10	S	BT
Eutectic 115B Solder with Eutectic 151B Flux	Eutectic Welding Alloy Corporation	2903			0.050	13/60	10	U	U
GSB-156		7482	0.03 mil tin plate over brass		0.067	4/20	10	U	U

TABLE VI. METALS, ALLOYS, AND SURFACE TREATMENTS (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/ No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
GSC-232		7483	0.03 mil tin plate over brass		0.038	0/20	10	S	BT
Handy Solder flux for high temp Soldering	Handy & Horsmen	6270			0.050	0/20	10	S	BT
Haynes Alloy Tubing Sleeve Soldered to Mu Metal		4505			0.063	0/20	10	S	BT
Haynes Alloy Tubing		4506			0.063	0/20	10	S	S
Indium Foil	National Bureau of Standards	5482	Indium		0.003	11/40	10	U	U
Indalloy Flux No. 2	Indium Corporation of America	6329		Baked @ 100°C for one hour	Smear on stainless steel inserts	15/20	10	U	U
Inconel 69 Weld Wire	Space Division NAR	MC-2050			-	0/20	10	S	S
K-6 Alloy	Karl-Harrison Co.	11368	Nickel, Lead & Tin on stainless steel		0.066	4/4	10	U	BT
K-6 Alloy	Karl-Harrison Co.	2141	Nickel, Lead & Tin on stainless steel		0.066	0/40	10	S	BT
K-Seal (PE)	Karl-Harrison Co.	11392	Tin plated on stainless		0.063	6/20	10	U	U
Kelite Process 235	Kelite Company	8233			0.050	2/20	10	U	U
Kester Solder No. 955 Flux 44 Core 16 QQ-S-571C	Kester Solder Company	5559	95% tin/5% silver		0.005	15/20 12/20 8/20 5/20 2/20 1/20	10 8 6 4 2 1	U - - - - -	U - - - - -
Kester Solder Tin 20 Core 66 Flux 44 (QQ-S-571-C Spec)	Kester Solder Company	5553	20% tin/1.2% antimony. Remainder lead	Stainless steel inserts used	0.009	6/20 7/20 7/20 2/20 2/20 0/20	10 8 6 4 2 1	U - - - - -	U - - - - -

TABLE VI. METALS, ALLOYS, AND SURFACE TREATMENTS (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/ No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
Kirkson No. 20 Alloy with Indalloy No. 2 Flux on Stainless Steel	Southwestern Industries	6447		Cleaned per ES-195 procedure		0/20	10	S	BT
Kirkson Solid Wire Solder TEC	Morris P. Kirk and Sons, Incorporated	6055	95% cadmium/5% silver	Heated and rolled	0.012	0/20 0/20	11.3 10	S	BT
Kirkson Solid Wire Solder No. 20	Morris P. Kirk and Sons, Incorporated	6057	97.5% lead/1% tin	Heated and rolled	0.012	0/20 0/20	11.3 10	S	BT
Kirkson Solid Wire Solder No. 390	Morris P. Kirk and Sons, Incorporated	6049		Heated and rolled	0.005	3/20 1/20	10 8	U	U
Kirkson Solid Wire Solder No. 625	Morris P. Kirk and Sons, Incorporated	6051	Cadmium-zinc composite	Heated and rolled	0.015	0/20	11.3	S	BT
Kirkson Solid Wire Solder No. B-95AG	Morris P. Kirk and Sons, Incorporated	6059	94% lead/5.5% silver	Heated and rolled	0.010	0/20 0/20	11.3 10	S	BT
Kirkson Solid Wire Solder No. B-975G	Morris P. Kirk and Sons, Incorporated	6053	97.5% lead/2.5% silver	Heated and rolled	0.015	0/20	10	S	BT
Kovar-A Alloy		962	Nickel, Cobalt, Iron		0.063	0/20	10	S	S
LA-91 Rod Stock	Micro-Systems, Incorporated	5852		Stainless steel inserts	0.25	13/20	10	U	U
Laminated Shim Stock		6004			0.125	0/20	10	S	BT
LAZ 933 Alloy	Battelle Memorial Institute	5997	Magnesium-aluminum-zinc alloy	Stainless steel inserts	0.068	20/20 18/20 15/20 9/20 0/20	10 8 6 4 2	U	U
LA-91		4392	Lithium-aluminum magnesium alloy		0.050	17/20 4/20 0/20 0/20	10 5 4 3	U	U
LA-91		4391	Lithium-aluminum magnesium alloy		0.100	12/20 0/20 0/20 0/20	10 7 6 5	U	U

TABLE VI. METALS, ALLOYS, AND SURFACE TREATMENTS (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/ No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
LA-141		4493	Lithium-aluminum magnesium alloy		0.050	18/20 3/20 2/20 0/20	10 5 4 3	U	U
LA-141		4498	Lithium-aluminum magnesium alloy		0.100	15/20 1/20 1/20 0/20	10 7 6 5	U	U
Lead Sheet		4799			0.125	0/20	10	S	BT
Lead Slugs		4811A			0.063	0/20	10	S	BT
Lead		4811		Previously tested as slugs 0.063 inch thick (See 4811A)	0.012 to 0.014	0/20	10	S	BT
Lead Oxide Slurry	Kennedy Space Center	8857		Dried at 100°C	0.050	0/40	10	S	BT
Lemco-LC B	Metallic Materials Branch	9892		Air dried 90 hours	0.010	0/20	10	S	BT
Magnesium-Lithium Alloy LA-91		1222			0.063	2/3 1/2 1/3 1/12 0/20	10 8 7 6 3	U	U
Magnesium-Lithium Alloy LA-141		1221			0.063	1/2 0/20	10 3	U	U
Magnesium Cups, Untreated		540				2/7	10	U	U
Magnesium Alloy HK 31	Dow Metal Products Company	1703	Magnesium, thorium, zirconium alloy		0.063	0/20	10	I	I
Magnesium Alloy M-1	Dow Metal Products Company	1702	Magnesium, aluminum, manganese alloy		0.063	2/20	10	U	U
Magnesium Alloy AZ-31	Dow Metal Products Company	1701	Magnesium, zinc, manganese alloy		0.063	2/3 1/4 0/11	10 5 3	U	U

TABLE VI. METALS, ALLOYS, AND SURFACE TREATMENTS (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/ No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
Magnesium Alloy M-1		1702	1/5% manganese			2/20	10	U	U
Magnesium HK-31XA-II24 Alloy	Metallic Materials Branch	9281	Magnesium-Titanium alloy		0.062	9/60	10	U	U
Magnesium HM-21XA Alloy	Metallic Materials Branch	9284			0.063	4/20 2/20 1/20	10 7.7 5.6	U	U
Mu Metal		4519			0.033	0/20	10	S	S
Metro LOX Rust Inhibitor	Metallic Materials Branch	9132	Calcium carbonate		0.050	0/20	10	S	BT
Mercury		11429			0.003	0/20	10	S	S
Neutpak Wire Solder 95/5	Federated Metal Division of American Smelting and Refining Company	5565	95% tin/5% silver	Stainless steel inserts used	0.007	10/20 11/20 3/20 2/20 3/20 0/20	10 8 6 4 2 1	U	U
P/M 45224 Shim Spacer LOX Inducer		3648			0.020	0/20	10	S	BT
Phos-IT	Wyandotte Chemical Company	10328			0.050	0/20	10	S	BT
34137 Connectors		7484		Stainless steel inserts Stainless steel inserts	0.072 0.090	0/17 1/20	10 10	I	I
Phoson 15 Hard Solder		5701	High silver content	Stainless steel inserts	0.020	0/20 0/20	11.3 10	S	BT
Q-21 Flux	Zophor Mills, Incorporated	6271			0.5 ml	12/20 9/20 9/20 4/20 2/20 0/20	10 8 6 4 2 1	U	U
Red-16 ACS Solution	General Dynamics Company	7980			0.050	0/20	10	S	BT
Sermetal (Type W) Inorganic Coating		7475		Stainless steel inserts dipped and air dried		0/20	10	I	BT

TABLE VI. METALS, ALLOYS, AND SURFACE TREATMENTS (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/ No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
Silbond No. 45 Solder	United Wire and Supply Co.	758		150 mesh	0.032	0/20	10	S	BT
Silicon Carbide Abrasive in Bottom of Aluminum Cup		3173				0/20 0/20	10 5		
SN-10 Rosin Core Solder	Ray Manufacturing Alpha Metals	7625		Stainless steel inserts Stainless steel inserts	0.031 0.001	4/20 0/20	10 10	U U	U U
Solder 60/40 Lead Tin Solder	Eutectic Welding Alloy Corporation	5204	60% lead/40% tin		0.050	17/20	10	U	U
Solder No. 151B		3534	90% tin, zinc, nickel		0.032	10/20 3/20 0/20	10 4 2	U	U
Solder No. 153	Eutectic Welding Alloy Corporation	3538	90% lead, 10% silver		0.032	3/20 2/22 0/20	10 7 5	U	U
Solder No. 155	Eutectic Welding Alloy Corporation	3541			0.032	2/35 2/20	10 8	U	U
Solder	Temmerman Products, Inc.	34	50% tin, 50% lead	No flux		3/5 0/5	10 5	U	U
Solder		76	60% tin, 40% lead			2/6 1/6	10 3	U	U
Solder			60% tin, 40% lead	With flux		3/5 0/5	10 5	U	U
Solder, High Silver	Temmerman Products, Inc.			Paste heated to 1000°F 5 minutes. Droplets degreased with trichloroethylene		0/20	10	S	BT
Speed Nuts Type C41055-632-27		9294		Degreased with tri-chloroethylene	0.017	0/20	10	S	S
Steel, Rene 41 Stainless steel	Bethlehem Steel Company	4488			0.063	0/20	10	S	S
Steel, 18% Nickel Maraging Steel		4617		Heat Treatment 1200/163		0/20	10	S	S

TABLE VI. METALS, ALLOYS, AND SURFACE TREATMENTS (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/ No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
Steel, 19-9 DL Stainless Steel	International Nickel Co.  Space Division NAR	4487	70% copper, 30% nickel	Hand deburred	0.125	0/20	10	S	S
Steel Alloy No. CN-346		3849			0.050	0/20	10	S	S
Steel - 17-4PH Alloy		11431			0.020	0/20	10	S	S
Steel - 17-7PH Alloy		11430			0.030	0/20	10	S	S
Steel 440A		MC-1970				0/20	10	S	S
Stainless Steel Wool No. 4-33		379			0.50	1/2 0/12	10 7	U	U
Steel Wool		380				3/4 0/16	10 7	U	U
Stainless Steel 301 Alloy		2829			0.012	0/100 0/100	10 5	S	S
Stainless Steel 301 Alloy		2818			0.063	0/200 0/100	10 5	S	S
Stainless Steel 302 Alloy		3603			0.094	0/20	10	S	S
Stainless Steel 304		11434			0.062	0/20	10	S	S
Stainless Steel 304		11435			0.030	0/20	10	S	S
Stainless Steel 304		11440			0.093	0/20	10	S	S
Stainless Steel 321		11441			0.030	0/20	10	S	S
Stainless Steel 321		11442			0.062	0/20	10	S	S
Stainless Steel 321		11443			0.093	0/20	10	S	S
Stainless Steel 347 Alloy		3631			0.062	0/20	10	S	S
Silver Plated Stainless Steel		2449			0.063	0/20	10	S	S
Steel Inserts MXB 1113		3018			0.063	0/20	10	S	S



TABLE VI. METALS, ALLOYS, AND SURFACE TREATMENTS (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/ No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
Tin Plate (0.004 in.) on 421 Stainless Steel Inserts		1612			0.063	2/20	10	U	U
Tin Plate (0.001 in.) on Stainless Steel Inserts		2244			0.125	2/20 0/20	10 4	U	U
Tin Plate (0.002 in.) on Stainless Steel Inserts		2246			0.125	3/20 1/20 0/20	10 8 5	U	U
Tin Plate (0.0005 in.) in Stainless Steel Inserts		2235			0.125	2/5 1/20 0/20	10 5 4	U	U
Tin Plate (0.00025 in.) on Stainless Steel Inserts		2230			0.125	2/5 3/18 0/20	10 7 5	U	U
Titanium Alloy, 6Al-4V				Deburred	0.063	7/40 1/2 2/3 2/60 0/20	10 8 7 5 2	U	U
Titanium Alloy, 6Al-4V				Deburred	0.250	18/20 8/20 1/20	10 2 1	U	U
Titanium Alloy, 4Al-3 Mo-1V				Deburred	0.063	2/2 1/1 2/5 1/3 0/4	10 5 3 2 1	U	U
Titanium Alloy, RC55				Deburred	0.063	15/20 1/20 2/20 0/20	10 3 2 1	U	U
Titanium Alloy, 13V-11 Cr-3Al				Deburred	0.063	15/20 5/20 2/20 0/20	10 7 5 3 2	U	U

TABLE VI. METALS, ALLOYS, AND SURFACE TREATMENTS (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/ No. Tests	Energy Level kg/m	Batch or Jar Rating	Material Rating
Titanium Alloy, 5Al-2.5 Sn				Deburred	0.125	15/20 17/20 8/20 1/1 2/20	10 5 3 2 1	U - - - -	U - - - -
Titanium Alloy, 5Al-2.5 Sn				Deburred	0.063	11/20 3/20 1/20 1/20 0/20	10 5 3 2 1	U - - - -	U - - - -
Titanium Alloy, 5 Al-2.5 Sn				Deburred	0.063	4/20 1/20	10 5	U -	U -
Titanium Alloy, 5Al-2.5 Sn				Deburred	0.025	7/20 2/20 0/20	10 5 1	U - -	U - -
Titanium Alloy, 5Al-2.5 Sn				Deburred	0.010	2/40 2/20 0/20	10 5 3	U - -	U - -
Titanium Alloy, 75A	Allegheny Ludlum Steel Corporation			Steel inserts		2/2 2/2 2/4	10 5 3	U - -	U - -
Titanium Alloy, 140A	Allegheny Ludlum Steel Corporation			Steel inserts		4/4 2/3 2/3	10 5 3	U - -	U - -
Titanium Alloy	Ram Cru		Ram Cru-245	Steel inserts		2/2 2/3 1/15	10 5 3	U - -	U - -
Washer AN960PD416		2143	Anodized Type II Aluminum			1/60	10	S	BT
Young's Alloy Metal Washers	Ardel Corporation	3825			0.063	0/20	10	S	BT

TABLE VI. METALS, ALLOYS, AND SURFACE TREATMENTS (Concluded)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/ No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
Zirconium		3648			0.083	14/20 8/20 2/20 2/20 0/20	10 5 3 2 1	U - - - -	U - - - -
Wire Ceramic EZE-MO33AW9	Phelps Dodge Co.	4367				0/20	10	S	-
Wire AWG 38 Ceramic Coated Nickel clad silver	Physical Services Corp.	4369			0.01	0/20	10	S	S

TABLE VII. CHEMICALS, SOLVENTS, PAINTS, LEAK CHECK COMPOUNDS,  
DETERGENTS, AND MISCELLANEOUS MATERIALS

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/ No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
Acetic Acid		6035	Acetic acid		0.050	0/20	10	S	I
Acetone (Spectro Grade) Lot 30A		6910	Acetone		0.5 ml	12/20 12/20 5/20 4/20 8/20 4/20 3/20 1/20 3/20 0/20	10 9.0 7.62 6.24 4.85 3.46 2.08 2.08 1.39 1.39	U	U
Activated Charcoal	Kennedy Space Center	9862		Contract 8-030158	0.050	30/40 11/20 2/20 4/20 1/20	10 5.6 3.5 1.4 0.7	U	U
Activated Charcoal, AC-7096	Kennedy Space Center	9371			0.050	12/20	10	U	U
Activated Charcoal, AC-7096	Barnaby-Chaney Corp.	7843			0.050	12/20 10/20 10/20 13/20 9/20 3/20	10 7.7 5.6 3.5 1.4 0.7	U	U
Activated Charcoal 592	Barnaby-Chaney Corp.	9849			0.050	4/20 2/20 1/20 0/20	10 7.7 6.7 5.6	U	U
Aluminum Octoate	Witco Chemical Co., Inc.					6/20 0/20	10 5	U	U
Amyl Acetate, Normal		357				2/10	10	U	U
American Crown Soap, Type 6061	Hewitt Soap Company	10273			0.050	2/20	10	U	U

TABLE VII. CHEMICALS, SOLVENTS, PAINTS, LEAK CHECK COMPOUNDS,  
DETERGENTS, AND MISCELLANEOUS MATERIALS (Continued)

Chemical	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/ No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
Amvov Solvent Detergent	Amvov Soap Company	9772			0.050	0/20	10	S	BT
Aroclor 1254	Monsanto Chemical Corp.	657	Chlorinated hydrocarbon		0.050	0/20	10	U	BT
Aroclor 1254	Monsanto Chemical Corp.	656	Chlorinated hydrocarbon		0.001	9/20	10	U	BT
Asbestos Cement Composite	Test Laboratory	9910			0.125	0/20	10	S	BT
Benzene	Eastman Organic Chemical Company	9607		Violent Reactions	0.050	19/20 14/20 12/20 7/20 3/20 0/20	10 7.7 5.6 3.5 1.4 0.7	U	U
Benzene	Eastman Organic Chemical Company	9607		Violent reactions	0.025	20/20 10/20 10/20 8/20 4/20 0/20	10 7.7 5.6 3.5 1.4 0.7	U	U
Benzaldoxine	Eastman Organic Chemical Company	10203		Violent reactions	0.050	14/20 5/20 13/20 5/20 1/20	10 7.7 5.6 3.5 1.4	U	U
Benzyl Acetate	Eastman Organic Chemical Company	9296		Violent reactions	0.050	13/20 14/20 12/20 7/20 3/20 0/20	10 7.7 5.6 3.5 1.4 0.7	U	U
Benzyl Acetate	Eastman Organic Chemical Company	9307		Violent reactions	0.025	12/20 14/20 14/20 11/20 7/20 1/20	10 7.7 5.6 3.5 1.4 0.7	U	U

TABLE VII. CHEMICALS, SOLVENTS, PAINTS, LEAK CHECK COMPOUNDS,  
DETERGENTS, AND MISCELLANEOUS MATERIALS (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/ No. Tests	Energy Level KJ/m	Batch or Jar Rating	Material Rating
Benzyl Alcohol	Eastman Organic Chemical Company	9319		Violent reactions	0.050	20/20 14/20	10 7.7	U	U
Benzyl Alcohol	Eastman Organic Chemical Company	9308		Violent reactions	0.025	14/20 20/20 20/20 20/20 20/20 20/20	7.7 5.6 3.5 1.4 0.7	U	U
Benzyl Methyl Ether	Eastman Organic Chemical Company	9512		Violent reactions	0.051	16/20 18/20 19/20 10/20 3/20 0/20	10 7.7 5.6 3.5 1.4 0.7	U	U
Benzyl Methyl Ether	Eastman Organic Chemical Company	9518		Violent reactions	0.025	13/20 15/20 17/20 13/20 3/20 0/20	10 7.7 5.6 3.5 1.4 0.7	U	U
Blast 3 Ultrasonic Cleaner	Narda Ultrasonic Corporation			Steel samples heated to 100°C in cleaner, rinsed, and dried		0/20	10	S	BT
Blast 3 Ultrasonic Cleaner	Narda Ultrasonic Corporation			50% solution evaporated dry		2/2 1/18	10 5	U	U
Blue Layout Dye	Octagon Process, Incorporated	9238		Lot B-2693		21/40	10	U	U
Black Marking Ink 73X	Independent Ink Company	7818		On anodized discs		25/40	10	U	U
Black Paint, Type Q36K802	Rinshed Mason Corporation	9395			0.005	15/20	10	U	U
Black Paint, Type Q36K802	Rinshed Mason Corporation	9396		Heat treated at 800°C for 370 sec.	0.005	2/30	10	U	U

TABLE VII. CHEMICALS, SOLVENTS, PAINTS, LEAK CHECK COMPOUNDS,  
DETERGENTS, AND MISCELLANEOUS MATERIALS (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/ No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
Bromobenzene	Eastman Organic Chemical Company	9545		Violent reactions	0.054	11/20 16/20 15/20 9/20 2/20 0/20	10 7.7 5.6 3.5 1.4 0.7	U	U
Bromobenzene	Eastman Organic Chemical Company	9551		Violent reactions	0.026	15/20 17/20 11/20 5/20 8/20 4/20 0/20	10 7.7 5.6 3.5 2.8 2.1 1.4	U	U
Ortho-Dichlorobenzene	Eastman Organic Chemical Company	9328		Violent reactions	0.025	16/20 13/20 11/20 9/20 7/20 3/20 0/20	10 7.7 5.6 3.5 2.8 2.1 0.7	U	U
Para-Dichlorobenzene	Eastman Organic Chemical Company	9587		Violent reactions	0.050	8/20 9/20 5/20 5/20 4/20 2/20 0/20	10 7.7 5.6 3.5 2.8 2.1 0.7	U	U
1-Bromobutane	Eastman Organic Chemical Company	10105		Violent reactions	0.050	10/20 9/20 11/20 7/20 4/20 0/20	10 7.7 5.6 3.5 2.8 1.4	U	U
1-Bromobutane	Eastman Organic Chemical Company	10112		Violent reactions	0.025	15/20 10/20 13/20 10/20 5/20 0/20	10 7.7 5.6 3.5 2.8 1.4	U	U

TABLE VII. CHEMICALS, SOLVENTS, PAINTS, LEAK CHECK COMPOUNDS,  
DETERGENTS, AND MISCELLANEOUS MATERIALS (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/ No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
Chlorobenzene	Eastman Organic Chemical Company	9623		Violent reactions	0.050	14/20 20/20 18/20 12/20 2/20 0/20	10 7.7 5.6 3.5 1.4 0.7	U	U
Chlorobenzene	Eastman Organic Chemical Company	9623		Violent reactions	0.025	14/20 20/20 18/20 12/20 2/20 0/20	10 7.7 5.6 3.5 1.4 0.7	U	U
Ortho-Dichlorobenzene	Eastman Organic Chemical Company	9320		Violent reactions	0.051	10/20 8/20 7/20 13/20 2/20 2/20 0/20 0/20	10 7.7 5.6 3.5 2.8 2.1 0.7 1.4	U	U
Cab-O-Sil HS-5		6610		Slurry of LOX and Cab-O-Sil		0/20	10	S	S
HT-56 Carbon Seal	Kennedy Space Center	7670	See Graphitor		0.063	0/20	10	S	BT
Carbon Seal	Borg Warner Corporation	10329	See HT-56		0.32	0/20	10	S	BT
Cleaner No. 1	Davis Young Company	10277			0.010	7/40	10	S	BT
Cerame No. 19 Inserts	Stathoms Instruments	5851		Stainless steel inserts	0.126	0/20	10	S	BT
Crud from LOX Tank West Area, F-1 Test Stand		6930				3/20	10	U	U
Carbon Tetrachloride, Technical Grade	Fisher Scientific Company	384				0/10	10	—	—
Carbon Tetrachloride, C.P.	Fisher Scientific Company	385		Residue from 5 ml.		0/20	10	S	S



TABLE VII. CHEMICALS, SOLVENTS, PAINTS, LEAK CHECK COMPOUNDS,  
DETERGENTS, AND MISCELLANEOUS MATERIALS (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/ No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
Carbon Tetrachloride	Fisher Scientific Company	383		Evaporated to 5% original weight		0/20	10	S	S
Chloroethene Solvent, 1,1,1 Trichloroethane	Dow Chemical Company	353				0/20	10	S	S
Chlorinated Polyether		821				2/2 2/2	10 5	U -	BT -
Chloroform		354				0/20	10	S	BT
Chlorotrifluoro Hydrocarbon	Halocarbon Corporation					0/20	10	S	BT
Chromic Acid Anodizing Solution		233				0/10	10	U	U
Chlorinated Paraffin	Hercules Powder Company	568				1/7	10	U	U
Corning Glass Type 9010	Corning Glass Co.	2950				0/20	10	S	S
Corning Glass 0088	Corning Glass Co.	4472			0.125	0/20	10	S	S
1-Bromodecane	Eastman Organic Chemical Company	9729		Violent reactions	0.050	15/20 17/20 16/20 5/20 3/20 0/20	10 7.7 5.6 3.5 2.8 1.4	U	U
1-Bromodecane	Eastman Organic Chemical Company	9736		Violent reactions	0.025	10/20 9/20 11/20 5/20 2/20 0/20	10 7.7 5.6 3.5 2.8 1.4	U	U
1-Chlorodecane	Eastman Organic Chemical Company	9679		Violent reactions	0.050	16/20 16/20 15/20 8/20 4/20 0/20	10 7.7 5.6 3.5 2.8 1.4	U	U

TABLE VII. CHEMICALS, SOLVENTS, PAINTS, LEAK CHECK COMPOUNDS,  
DETERGENTS, AND MISCELLANEOUS MATERIALS (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/ No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
1-Chlorooctadecane	Eastman Organic Chemical Company	9691		Violent reactions	0.050	19/20 20/20 20/20 7/20 5/20 0/20	10 7.7 5.6 3.5 2.8 1.4	U	U
Deak No. 1		1959			0.050	2/20	10	U	U
Diethyl Phthalate		340		Violent reaction	0.050	2/10	10	U	U
Dowell F-33	Dow Chemical Company	7118		Concentrate	0.050	6/20	10	U	U
Dowell F-33	Dow Chemical Company	9119		0.1% solution		0/20	10	S	BT
Dyna-Therm 7275	Dyna-Therm Chemical Corporation	5058			0.010	1/20 2/6 2/4 2/7 2/14 0/20	10 5 4 3 2 1	U	U
Ethylene Glycol		625		Violent reaction	0.050 0.050	1/20 0/20	10 10	U BT	U BT
Ethylene Glycol 25% in water		3617				0/6	10	I	I
Ferrite Core Material 3C	American Abrasive Metal Company	1917				1/1 2/2 2/2 2/6	10 5 2 1	U - - -	U - - -
Ferrox Safety Floor Covering		5427		Violent reaction	0.050	8/20	10	U	U
Flo-Master Ink	Cushman & Denison Manufacturing Company	8766		On anodized discs		11/20	10	U	U
Floor Scaler	Texize Corporation	9907	Vegetable oil detergent			6/20	10	U	U
Flaxsoup Detergent	Kennedy Space Center	511	Sodium salt	2 1/2 ml of 5% solution evaporated to dryness		2/2 2/5	10 5	U	U
Fluorescein									

TABLE VII. CHEMICALS, SOLVENTS, PAINTS, LEAK CHECK COMPOUNDS,  
DETERGENTS, AND MISCELLANEOUS MATERIALS (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/ No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
Fluoroalkyl Camphorate	E.I. du Pont de Nemours & Company, Incorporated					2/14 0/6	10 5	U -	U -
Fluorosilicone Polymer, Distilled						2/2 2/9 0/9	10 5 2	U - -	U - -
F-33 Detergent	Dow Chemical Company	993		0.1% solution		0/20	11	BT	BT
F-33 Detergent	Dow Chemical Company	6965		Concentrate	0.5 ml	2/20	10	U	U
FN Leak Detector	Fluid Scientific, Inc.	9391		On anodized discs		0/20	10	S	BT
Freon 113 (PCA)	E.I. du Pont de Nemours & Company, Incorporated	8256			0.050	0/20	10	S	S
Freon 113 (PCA)	E.I. du Pont de Nemours & Company, Incorporated	10266		Lot 81-7M	0.050	0/20	10	S	S
Genesolv D	Allied Chemical Company	10267		Electronic grade	0.050	1/60	10	S	S
Graphitor LOX Pump Seal	Kennedy Space Center	9908	See HT56	As received	0.050	9/20	10	U	BT
Graphitor LOX Pump Seal	Kennedy Space Center	9909	See Carbon Seal	Washed in F-33	0.050	1/20	10	S	BT
Getter Material	Union Carbide, Linde Division	6260	Palladium oxide	Stainless steel cups, Powder		0/20	10	S	S
Heck Check, Type I	The Heckerman Corporation	7558		Aluminum discs drained at 90° angle		2/20	10	U	U
Heck Check, Type II	The Heckerman Corporation	7560		Aluminum discs drained at 90° angle		2/20	10	U	U
Hexafluoropentamethylene Adipate Polyester	Hooker Electrochemical Company					2/11 0/9	10 5	U -	U -
1-Bromoheptane	Eastman Organic Chemical Company	10119			0.050	9/20 10/20 12/20 9/20 4/20	10 7.7 5.6 4.2 3.2	U	U

TABLE VII. CHEMICALS, SOLVENTS, PAINTS, LEAK CHECK COMPOUNDS,  
DETERGENTS, AND MISCELLANEOUS MATERIALS (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/ No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
1-Bromoheptane	Eastman Organic Chemical Company	10128		Violent reactions	0.025	9/20 11/20 8/20 3/20 0/20	10 7.7 4.2 3.5 1.4	U	U
1-Chloroheptane	Eastman Organic Chemical Company	9667		Violent reactions	0.050	15/20 12/20 12/20 3/20	10 7.7 5.6 4.2	U	U
Bromocyclohexane	Eastman Organic Chemical Company	10219		Violent reactions	0.050	7/20 2/20 1/20	10 7.7 7	U	U
1-Bromohexane	Eastman Organic Chemical Company	9705		Violent reactions	0.050	16/20 17/20 15/20 11/20 3/20 2/20 0/20	10 7.7 5.6 3.5 2.8 2.1 1.4	U	U
Hexanoic Acid	Eastman Organic Chemical Company	9432		Violent reactions	0.050	13/20 8/20 11/20 10/20 2/20 0/20	10 7.7 5.6 3.5 1.4 0.7	U	U
Hexanol 2	Eastman Organic Chemical Company	9534		Violent reactions	0.050	17/20 14/20 10/20 8/20 2/20 0/20	10 7.7 5.6 3.5 1.4 0.7	U	U

TABLE VII. CHEMICALS, SOLVENTS, PAINTS, LEAK CHECK COMPOUNDS,  
DETERGENTS, AND MISCELLANEOUS MATERIALS (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/ No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
N-Hexyl Ether	Eastman Organic Chemical Company	9495		Violent reactions	0.025	18/20 16/20 15/20 13/20 3/20 0/20	10 7.7 5.6 3.5 1.4 0.7	U	U
N-Hexyl Formate	Eastman Organic Chemical Company	10196		Violent reactions	0.050	11/20 15/20 14/20 3/20 1/20 0/20	10 7.7 5.6 3.5 2.8 1.4	U	U
Ink, Tech Pen, Black	Mark-Tex Corporation	437				3/17	10	U	U
Joy Detergent, 5% Solution Evaporated to Dryness		472				2/2 2/5	10 5	U	U
K-1008 Red Ink	Minnesota Mining and Manufacturing Company	6382		Novabestos		0/20	10	S	BT
Lauric Acid Solution		6064	Lauric acid (Dodecanoic acid)	Smearred on stainless steel inserts, air dried	Approx. 0.002	4/20 5/20 2/20	10 5 2	U	U
Lauric Acid Solution		6063	Lauric acid (Dodecanoic acid)		0.050	2/2 2/4 2/6 2/8	10 8 6 4	U	U
Liberty Stamp Pad Ink	Liberty Ink Company	6263		Evaporated to paste	0.25 ml	3/20	10	U	U
MIX-15 Rust Inhibitor	Cee Bee Chemical Company	6016 6452		Powder Powder	Approx. 0.050	2/20 0/20	10 10	U S	U U
Methyl and Fluoro Silicone Copolymer		6098				2/2 2/4 2/7	10 5 2	U	U
Molded Caulking Compound	Morco Handily Hardware Company	6576				19/20 10/20 9/20 9/20	10 5 2 1	U	U

TABLE VII. CHEMICALS, SOLVENTS, PAINTS, LEAK CHECK COMPOUNDS,  
DETERGENTS, AND MISCELLANEOUS MATERIALS (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/ No. Tests	Energy Level Kg/in	Batch or Jar Rating	Material Rating
N-Hexyl Ether	Eastman Organic Chemical Company	9495		Violent reactions	0.025	18/20 16/20 15/20 13/20 3/20 0/20	10 7.7 5.6 3.5 1.4 0.7	U	U
N-Hexyl Formate	Eastman Organic Chemical Company	10196		Violent reactions	0.050	11/20 15/20 14/20 3/20 1/20 0/20	10 7.7 5.6 3.5 2.8 1.4	U	U
Ink, Tech Pen, Black	Mark-Tex Corporation	437				3/17	10	U	U
Joy Detergent, 5% Solution Evaporated to Dryness		472				2/2 2/5	10 5	U	U
K-1008 Red Ink	Minnesota Mining and Manufacturing Company	6382		Novabestos		0/20	10	S	BT
Lauric Acid Solution		6064	Lauric acid (Dodecanoic acid)	Smearcd on stainless steel inserts, air dried	Approx. 0.002	4/20 5/20 2/20	10 5 2	U	U
Lauric Acid Solution		6063	Lauric acid (Dodecanoic acid)		0.050	2/2 2/4 2/6 2/8	10 8 6 4	U	U
Liberty Stamp Pad Ink	Liberty Ink Company	6263		Evaporated to paste	0.25 ml	3/20	10	U	U
MX-15 Rust Inhibitor	Coe Bee Chemical Company	6016 6452		Powder Powder	Approx. 0.050	2/20 6, 20	10 10	U S	U U
Methyl and Fluoro Silicone Copolymer		808				2/2 2/4 2/7	10 5 2	U U	U U
Morhand Caulking Compound	Moore-Handley Hardware Company	3328				19/20 10/20 9/20 0/20	10 5 2 1	U U U U	U U U U

TABLE VII. CHEMICALS, SOLVENTS, PAINTS, LEAK CHECK COMPOUNDS,  
DETERGENTS, AND MISCELLANEOUS MATERIALS (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/ No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
Magnesium Oxide		1951				0/20	10	S	S
Oxylene Evaporated to 5% Original Volume	John B. Moore Corporation	664	Freon 11 and Methylene chloride			0/20	10	S	BT
Methyl Fluorosiloxane	General Precision Company	10068		Violent reactions	0.040	18/40	10	U	U
Nero-Fill (S-2) Carbon	Great Lakes Carbon Products Company	10038			0.050	0/20	10	S	BT
Nessin Metal Marker	J.P. Nessin, Jr. Company	8725			0.004	6/20	10	U	U
Oakite 33 Cleaner	6962	6962			0.5 ml	0/20	10	S	BT
Oakite 34		6961		Granules		0/20	10	S	BT
Oxy-Tec, Type 1, (Oxygen Leak Detector)	American Gas and Chemical Company	7311			0.5 ml	0/20	10	S	BT
Bottle No. 1		7312		Aluminum discs drained at 90° angle		0/20	10	S	BT
Bottle No. 2		7310		Aluminum discs drained at 90° angle	0.5 ml	0/20	10	S	BT
Bottle No. 2		7313				0/20	10	S	BT
Paper Pockets	Straza Industries	10039			0.009	7/20	10	U	U
Paint, White		5740	One coat Indurall (MIL-P-8585A) and one coat Glidden white (MIL-E-5556)			3/20	10	U	U
Paint, Black		5739	One coat Indurall (MIL-P-8585A) and one coat Warren black			2/20 8/20	10 6	U	U
Paint, Green		5742	Indurall (MIL-P-8585A) Color No. 34151-5-30-35 (one coat)			5/20 6/20	10 6	U	U

TABLE VII. CHEMICALS, SOLVENTS, PAINTS, LEAK CHECK COMPOUNDS,  
DETERGENTS, AND MISCELLANEOUS MATERIALS (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/ No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
Paint, White		5744	Glidden white (MIL-E-5556)			5/20	10	U	U
Passivating Solution (Steel)		5429	Solution consisting of 0.25% disodium phosphate, 0.25% mono- sodium phosphate, 0.50% sodium nitrate and water			0/20	10	S	S
Chloronaphthalene	Eastman Organic Chemical Company	10214		Violent reactions	0.050	13/20 5/20 1/20 0/20	10 7.7 7.0 5.6	U	U
Bromocyclopentane	Eastman Organic Chemical Company	10189		Violent reactions	0.050	7/20 8/20	10 7.7	U	U
1-Bromopentane	Eastman Organic Chemical Company	10069		Violent reactions	0.050	19/20 19/20 14/20 4/20 2/20 0/20	10 7.7 5.6 3.5 2.8 1.4	U	U
1-Bromopentane	Eastman Organic Chemical Company	10076		Violent reactions	0.025	14/20 11/20 12/20 3/20 0/20	10 7.7 3.5 2.8 1.4	U	U
1-5-Dibromopentane	Eastman Organic Chemical Company	10208		Violent reactions	0.050	8/20 4/20 5/20 3/20 1/20 0/20	10 7.7 5.6 3.5 2.1 1.4	U	U
1-Bromopropane	Eastman Organic Chemical Company	10191		Violent reactions	0.050	9/20 4/20 8/20 7/20 1/20	10 7.7 5.6 3.5 1.4	U	U



TABLE VII. CHEMICALS, SOLVENTS, PAINTS, LEAK CHECK COMPOUNDS,  
DETERGENTS, AND MISCELLANEOUS MATERIALS (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/ No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
2-Chloropropane	Eastman Organic Chemical Company	9645		Violent reactions	0.050	17/20	10	U	U
						18/20	7.7		
						13/20	5.6		
						5/20	3.5		
						0/20	1.4		
2-Chloropropane	Eastman Organic Chemical Company	9651		Violent reactions	0.025	15/20	10	U	U
						16/20	7.7		
						15/20	5.6		
						11/20	3.5		
						3/20	1.4		
1-2-Dibromopropane	Eastman Organic Chemical Company	10136		Violent reactions	0.050	8/20	10	U	U
						6/20	7.7		
						7/20	5.6		
						1/20	3.5		
						0/20	1.4		
1-2-Dibromopropane	Eastman Organic Chemical Company	10143		Violent reactions	0.025	11/20	10	U	U
						12/20	7.7		
						13/20	5.6		
						4/20	3.5		
						1/20	2.8		
1-3-Dibromopropane	Eastman Organic Chemical Company	10182		Violent reactions	0.050	0/20	1.4	U	U
						8/20	10		
						7/20	7.7		
						3/20	5.6		
						1/20	3.5		
Bromoctane	Eastman Organic Chemical Company	10175		Violent reactions	0.050	0/20	1.4	U	U
						11/20	10		
						14/20	7.7		
						16/20	5.6		
						9/20	4.9		
Perchloroethylene Liquid	Hooker Electrochemical Company	358				2/20	4.2	S	S
						0/20	2.8		
						0/20	10		

TABLE VII. CHEMICALS, SOLVENTS, PAINTS, LEAK CHECK COMPOUNDS,  
DETERGENTS, AND MISCELLANEOUS MATERIALS (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/ No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
Perchloropentacyclo Decane	Hooker Electrochemical Company	817				0/20	10	S	BT
No. 67 Purified	Pittman-Dunn Laboratory					0/20	10	S	BT
Perfluorotributylamine, (Purified)	Pittman-Dunn Laboratory	812				0/20	10	S	BT
Perfluorotributylamine and Chlorotrifluorohydrocarbon (1:1)	Frankford Arsenal	3569				0/20	10	S	BT
Pluronic L-62-F Detergent	Wyandotte	7616		0.1 percent solution, on aluminum discs drained at 90° angle		0/20	10	S	BT
Pluronic L-62-F Detergent	Wyandotte	7615		Concentrated solution, on aluminum discs, drained at 90° angle		16/20	10	U	U
Pluronic L-62-LF Nonionic Detergent	Wyandotte	7650		0.5 percent solution	0.5 ml	0/20	10	S	BT
Pluronic L-62-LF Nonionic Detergent	Wyandotte	7649		Aluminum discs drained at 90° angle, 0.5% solution		0/20	10	S	BT
Polyglycol 11-200, Lot 261	Dow Chemical Company	931		Violent	0.050	1/20	10	U	U
Polyglycol 15-200	Dow Chemical Company	932	Polyoxyalkylene ethers with methyl side chains and terminal hydroxyl groups		0.050	2/12	10	U	U
Polyglycol 166-900	Dow Chemical Company	1940			0.050	0/20	10	I	I
Polyglycol 174-500	Dow Chemical Company	929	Polypropylene glycol	Violent	0.050	1/20	10	I	U
Polyglycol P-400	Dow Chemical Company	934	Polypropylene glycol		0.050	2/20	10	U	U
Polyglycol P-2000	Dow Chemical Company	933	Polypropylene glycol		0.050	2/2	10	U	U
Quartz (Clear Fused) Sample 1-1551-A-20X		1776			0.050	0/20	10	S	S

TABLE VII. CHEMICALS, SOLVENTS, PAINTS, LEAK CHECK COMPOUNDS,  
DETERGENTS, AND MISCELLANEOUS MATERIALS (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/ No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
Rely-On Caulking Compound	DAP Incorporated	3331				12/20 13/20 13/20 3/20	10 5 2 1	U - - -	U - - -
Rust Oleum A-4208-50 Launch Grey Paint	Rust Oleum Corporation	5180		Dip coat	0.005	0/40	10	S	BT
Safety Walk Type B	Minnesota Mining and Manufacturing Company	1916				1/1 2/2 4/20	10 5 0.75	U - -	U - -
Semco Bubble Check DPS 4 905	Semco Sales and Service	3450				0/40	10	S	BT
Sherlock Leak Detector, Type I	Winton Products Company	8258		Batch 12135		0/20	10	S	HT
Sherlock Lead Detector, Type II	Winton Products Company	8259		Batch 3564		5/20	10	U	BT
Sherlock, 5 Second Leak Detector, Type II	Winton Products Company	5672		2.5 ml evaporated at 100°C	2.5 ml	1/60	10	S	BT
Sherlock C G-1 Bubble Tester		3419				0/40	10	S	BT
Silica Gel, Indicating 6-16 Mesh	E.H. Sargent and Company	2492				0/20	10	S	S
Spotcheck Cleaner Type SKC-2-1	Magnaflux Corporation		Chlorinated hydrocarbon			0/60	10	S	S
Snoop Leak Detector	Nuclear Products Company	430				0/20	10	S	BT
Skript Writing Fluid Permanent No. 54, Royal Blue	Shaeffer Pen Company	6264		Evaporated to dryness	0.25 ml	0/20	10	S	BT
Skript Writing Fluid, Permanent No. 54, Royal Blue	Shaeffer Pen Company	6266			0.25 ml	0/20	10	S	BT
Skydrol 500	Monsanto Chemical Company	455				1/4 0/20	10 7	U	U

TABLE VII. CHEMICALS, SOLVENTS, PAINTS, LEAK CHECK COMPOUNDS,  
DETERGENTS, AND MISCELLANEOUS MATERIALS (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (in.)	No. Reactions/ No. Tests	Energy Level KJ/m	Batch or Jar Rating	Material Rating
Swift Soap 40/45	Swift and Company	10280			0.050	3/20	10	U	U
Soap 6606	Hewitt Soap Company	10279			0.050	12/20	10	U	U
Soap 6602	Hewitt Soap Company	10274			0.050	3/20	10	U	U
Soap 6603 Easy Flow	Hewitt Soap Company	10275			0.050	2/20	10	U	U
Sodium-Dichromate		584				0/20	10	S	S
Sodium Silicate	Fisher Scientific Company	3393				0/20 0/40	10 5	S -	S -
Solution of 30 percent NaOH and 9 g/L of Gum Tragacanth		6929	30 percent solution NaOH and gum tragacanth	Stainless steel cups	0.5 ml	0/20	10	S	I
Stoddard Solvent		553		Extremely violent explosion		1/9	10	U	U
Tech-Pen Ink Type K	Mark-Tex Corporation	7060			0.10	15/20	10	U	U
Work Glove MSA 87633	Mine Safety Appliances	6248		Stainless steel inserts	0.075	20/20	10	U	U
Tetron AC	E.I. du Pont de Nemours & Company, Incorporated	1952				3/20	10	U	U
Tenamine - 3	Dow Chemical Company	3544				1/1 1/3 1/4	10 2 1	U - -	U - -
Torque Paint	Eronel Industries	8251		Room temperature cured for 20 hrs.	0.012	8/20	10	U	U
Triton X-100	Kennedy Space Center	8845			0.050	6/20	10	U	U
Tridene WR	Metallic Materials Branch	10257	1-1-1 Trichloroethylene		0.050	0/20	10	S	BT
1-1-1-Trichloroethane	Metallic Materials Branch	8380			0.050	0/20	10	S	S
Thermocolor Number 34 Temperature Sensitive Point	Bodische Awilim-Soda Fabrik	430				3/20	10	U	U

TABLE VII. CHEMICALS, SOLVENTS, PAINTS, LEAK CHECK COMPOUNDS,  
DETERGENTS, AND MISCELLANEOUS MATERIALS (Continued)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/ No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
Thermocolor Number 15 Temperature Sensitive Point	Bodishe Awilun-Soda Fabrik	431				0/20	10	I	I
Tide Detergent	Proctor and Gamble Company	417		2 ml 1% solution evaporated to dryness		4/20	10	U	U
Trichloroethylene Evaporation Residue	Du Pont Trichloroethylene			Four batches tested		3/17 2/2	10 10	U	BT
Trichloroethylene, Extraction Grade, Evaporation Residue		544				0/2	10	C	I
Trichloroethylene, Missile Grade, Liquid		396				0/20	10	S	S
Trichloroethylene, Liquid	Dow Chemical Company	486		Liquid		0/20	10	S	S
Trichloroethylene (Perma-A- Chlor-NA) Residue	E.I. du Pont de Nemours & Company, Incorporated	397		10 mg		2/5 2/15	10 5	U	BT
Trichloroethylene (Perma-A- Chlor-NA) Residue	E.I. du Pont de Nemours & Company, Incorporated			5 mg		2/4 1/16	10 5	U	BT
Trichloroethylene (Perma-A- Chlor-NA) Residue	E.I. du Pont de Nemours & Company, Incorporated			25 mg		1/20	10	C	BT
Trichloroethylene (Triclene D)	E.I. du Pont de Nemours & Company, Incorporated	361		Sensitivity varies from batch to batch		0-2/20	10	C	BT
Trichloroethylene Evaporation Residue	Detrex Trichloroethylene			Liquid		0/20	10	S	S
Trichloroethylene Evaporation Residue Lot No. 218	Detrex Trichloroethylene			Liquid		0/20	10	S	S
Trichloroethylene Evaporation Residue Lot No. WB83	Detrex Trichloroethylene	544		Liquid		0/20	10	S	S
Tricresyl Phosphate		954				5/20	10	U	U
Triauryl Silicon Fluoride	Imperial Arsenal					2/5 1/4	10 5	U	U

TABLE VII. CHEMICALS, SOLVENTS, PAINTS, LEAK CHECK COMPOUNDS,  
DETERGENTS, AND MISCELLANEOUS MATERIALS (Concluded)

Material	Manufacturer or Source	Test No.	Composition	Remarks	Thickness (inch)	No. Reactions/ No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
Vycor Glass, Corning Type 7913	Corning Glass Works	1693				0/20	10	S	S
Vermiculite (hydrated) Magnesium, Aluminum, Iron Silicate						0/20	10	S	S
Vel Pink Liquid Detergent	Colgate-Palmolive Peet Co.	4898	Novabestos 7511T soaked in Vel for one hour. Dried for one hour at 60°C			17/20	10	U	U
Vel Pink Liquid Detergent	Colgate-Palmolive Peet Co.	4497			0.050	0/20	10	U	U
Warren Spray Enamel Primer (Brown)	Warren Paint and Color Company	3245				4/20 2/20	10 5	U	U
Warren Spray Enamel Yellow Zinc Chromate	Warren Paint and Color Company	3247				2/20	10	U	U
Zinc Chromate Paste	389	389				3/20 1/20 2/20	10 5 2	U	U
Zinc Chromate (SPEC-MIL- P-8585)	Chromatone Corporation	3526				2/20 2/20 0/20	10 5 1	U	U
1,3,5-Trimethyl, 2,4,6- Trifluoro Benzene	Illinois State Geological Survey					1/20	10	C	C

TABLE VIII. PENETRANTS AND PENETRANT COMPONENTS

Material	Manufacturer or Source	Test No.	Sample Preparation	Remarks	Thickness (inch)	No. Reactions/No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
Fluoro Finder FL-50 Penetrant	Testing Systems, Incorporated	8597		On anodized discs		20/20	10		U
D-492A (24-44-4) Developer	Shannon Luminous Materials Company	4895	0.50 cc volume in test cup	High sensitivity mixed 1/2 pound per gallon		0/20	10	-	BT
D-492A (24-44-4) Developer	Shannon Luminous Materials Company	4894	0.25 cc volume in test cup			0/20	10	-	BT
D-492A (24-44-4) Developer	Shannon Luminous Materials Company	4893	0.50 cc volume oven dried 30 minutes at 100°C			0/20	10	-	BT
D-492A (24-44-4) Developer	Shannon Luminous Materials Company	4892	0.50 cc volume vacuum dried for 45 minutes			0/20	10	-	BT
D-498 Developer	Shannon Luminous Materials Company	4913	0.05 inch in test cup	High sensitivity mixed 1/2 pound per gallon		0/20	10	-	BT
E-159 (25-7-3) Emulsifier	Shannon Luminous Materials Company	4914	0.50 cc volume in test cup	Emulsifier for P-505 Penetrant		0/20	10	-	U
E-159 (25-7-3) Emulsifier	Shannon Luminous Materials Company	4909	0.25 cc volume in test cup			3/20	10	-	U
E-159 (25-7-3) Emulsifier	Shannon Luminous Materials Company	4907	0.50 cc volume, oven dried at 100°C for 3 hours, 30 minutes			5/20	10	-	U
E-159 (25-7-3) Emulsifier	Shannon Luminous Materials Company	4900	0.50 cc volume, vacuum dried			2/20	10	-	U
E-159 (25-7-3) Emulsifier	Shannon Luminous Materials Company	4910	Novabestos 7511T soaked in E-159 for 1 hour, oven dried at 60°C for 30 minutes	Emulsifier for P-505 Penetrant		20/20	10	-	U
Tracer Tech Cleaner K-4-10A	Shannon Luminous Materials Company	10384		On anodized discs		0/20	10		BT
E-153 Emulsifier	Consolidated American Services, Inc.	4239	0.50 cc volume in test cup	Emulsifier for P-148 Penetrant		14/20 1/7 1/8	10 5 3		U

TABLE VIII. PENETRANTS AND PENETRANT COMPONENTS (Continued)

Material	Manufacturer or Source	Test No.	Sample Preparation	Remarks	Thickness (inch)	No. Reactions/ No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
P-138 Penetrant	Consolidated American Services, Inc.	4242	0.50 cc volume in test cup	Water-washable		2/4 2/12	10 5	-	U
P-148 Penetrant	Consolidated American Services, Inc.	4241	0.50 cc volume in test cup	Post emulsifiable		3/8 2/5 1/1	10 5 3	-	U
P-236 (22-83-2) Shannon Glow Penetrant	Consolidated American Services, Inc.	4249	0.50 cc volume in test cup	Corrodes aluminum alloys		0/40	10	-	BT
P-236 (22-83-2) Shannon Glow Penetrant	Consolidated American Services, Inc.	4248	0.25 cc volume in test cup	Corrodes aluminum alloys		0/20	10	-	BT
P-236 (22-83-2) Shannon Glow Penetrant	Consolidated American Services, Inc.	4302	0.25 cc volume in test cup	Batch No. 1		0/40	10	-	BT
P-236 (22-83-2) Shannon Glow Penetrant	Consolidated American Services, Inc.	4300	0.25 cc volume in test cup	Batch No. 2		0/40	10	-	BT
P-236 (22-83-2) Shannon Glow Penetrant	Consolidated American Services, Inc.	4298	0.25 cc volume in test cup	Batch No. 3		0/40	10	-	BT
P-236 (22-83-2) Shannon Glow Penetrant	Consolidated American Services, Inc.	4244	2 cc volume evaporated to dryness	Batch No. 3		0/20	10	-	BT
P-236 (22-83-2) Shannon Glow Penetrant	Consolidated American Services, Inc.	4297	2.50 cc volume evaporated to dryness	Batch No. 3		0/20	10	-	BT
Tracer Tech P-133 Penetrant	Shannon Luminous Materials Company	9394		On anodized discs		20/20	10	U	U
P-505 (25-7-5) Penetrant	Shannon Luminous Materials Company	4919	0.50 cc volume in test cup			0/20	10	-	BT
P-505 (25-7-5) Penetrant	Shannon Luminous Materials Company	4908	0.25 cc volume in test cup			0/20	10	-	BT
P-505 (25-7-5) Penetrant	Shannon Luminous Materials Company	4918	0.50 cc volume oven dried for 1 hour			0/20	10	-	BT
P-505 (25-7-5) Penetrant	Shannon Luminous Materials Company	4735	0.50 cc volume oven at 100° C for 11 hours			1/6	10	-	BT



TABLE VIII. PENETRANTS AND PENETRANT COMPONENTS (Continued)

Material	Manufacturer or Source	Test No.	Sample Preparation	Remarks	Thickness (inch)	No. Reactions/No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
P-505 (25-7-5) Penetrant	Shannon Luminous Materials Company	4911	Novabestos 7511T (0.020) soaked in penetrant for 1 hour, oven dried at 60°C for 30 minutes, left in oven overnight with heat off			0/20	10	-	BT
Tracer Tech P-545 (30-7-2) Penetrant	Shannon Luminous Materials Company	10383		On anodized discs		0/20	10	-	BT
P-600 (25-40-5) W/W Diamorphic Tracer-Tech Penetrant	Shannon Luminous Materials Company	5278	0.50 cc volume in test cup			0/20	10	-	BT
P-600 (25-40-5) W/W Diamorphic Tracer-Tech Penetrant	Shannon Luminous Materials Company	5279	0.25 cc volume in test cup			2/20	10	-	BT
P-600 (25-40-5) W/W Diamorphic Tracer-Tech Penetrant	Shannon Luminous Materials Company	5277	0.50 cc volume oven dried for 3 hours at 100°C			7/20	10	-	BT
P-605 (25-40-4) W/W Diamorphic Tracer-Tech Penetrant	Shannon Luminous Materials Company	5286	0.50 cc volume in test cup			0/20	10	-	U
P-605 (25-40-4) W/W Diamorphic Tracer-Tech Penetrant	Shannon Luminous Materials Company	5285	0.25 cc volume in test cup			0/20	10	-	U
P-605 (25-40-4) W/W Diamorphic Tracer-Tech Penetrant	Shannon Luminous Materials Company	5281	0.50 cc volume oven dried at 100°C for 3 hours			6/20	10	-	U
P-605 (25-40-4) W/W Diamorphic Tracer-Tech Penetrant	Shannon Luminous Materials Company	5284	0.50 cc volume vacuum dried for 3 hours			6/20	10	-	U
P-605-W (25-40-4) Diamorphic Tracer-Tech Penetrant	Shannon Luminous Materials Company	5879	0.50 cc volume in test cup			0/20	10	-	U
P-605-W (25-40-4) Diamorphic Tracer-Tech Penetrant	Shannon Luminous Materials Company	5884 5883	0.25 cc volume in test cup			5/20	10	-	U
P-605-W (25-40-4) Diamorphic Tracer-Tech Penetrant	Shannon Luminous Materials Company	5876	0.50 cc volume oven dried at 100°C to approximately 0.25 cc			15/40	10	-	U

TABLE VIII. PENETRANTS AND PENETRANT COMPONENTS (Continued)

Material	Manufacturer or Source	Test No.	Sample Preparation	Remarks	Thickness (inch)	No. Reactions/ No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
P-605-W (25-40-4) Diamorphic Tracer-Tech Penetrant	Shannon Luminous Materials Company	5882 5881 5880	Novabestos 7511T soaked in penetrant for 1 hour, drained for 30 minutes, dried at 60°C for 30 minutes			20/20 20/20 20/20	10 2 1	- - -	U - -
P-605-W (25-40-4) Diamorphic Tracer-Tech Penetrant	Shannon Luminous Materials Company	5941 5940 5939	Anodized aluminum discs dipped in penetrant, drained on edge 15 min.	Per Shannon Luminous Materials Co. Specification		20/20 13/20 4/20	10 2 1	- - -	U - -
P-605-W (25-40-4) Tracer-Tech Penetrant (10:1 Dilution)	Shannon Luminous Materials Company	6020	0.25 cc volume in test cup	Diluted 10 to 1		0/20	10	-	BT
P-605-W (25-40-4) Tracer-Tech Penetrant (10:1 Dilution)	Shannon Luminous Materials Company	6019	Novabestos 7511T soaked in penetrant for 1 hour, drained for 30 minutes, dried at 60°C for 30 minutes	Diluted 10 to 1		0/20	10	-	BT
P-610 (25-40-3) W/W Diamorphic Tracer-Tech Penetrant	Shannon Luminous Materials Company	5273	0.50 cc volume in test cup			4/20	10	-	U
P-610 (25-40-3) W/W Diamorphic Tracer-Tech Penetrant	Shannon Luminous Materials Company	5272	0.25 cc volume in test cup			5/20	10	-	U
P-610 (25-40-3) W/W Diamorphic Tracer-Tech Penetrant	Shannon Luminous Materials Company	5270	0.50 cc volume oven dried at 100°C for 3 hours			8/20	10	-	U
P-610 (25-40-3) W/W Diamorphic Tracer-Tech Penetrant	Shannon Luminous Materials Company	5271	0.50 cc volume vacuum dried			10/20	10	-	U
P-615 (25-40-1) W/W Diamorphic Tracer-Tech Penetrant	Shannon Luminous Materials Company	5270	0.50 cc volume in test cup			0/20	10	-	U
P-615 (25-40-1) W/W Diamorphic Tracer-Tech Penetrant	Shannon Luminous Materials Company	5276	0.25 cc volume in test cup			2/20	10	-	U
P-615 (25-40-1) W/W Diamorphic Tracer-Tech Penetrant	Shannon Luminous Materials Company	5274	0.50 cc volume oven dried at 100°C for 3 hours			3/20	10	-	U

TABLE VIII. PENETRANTS AND PENETRANT COMPONENTS (Continued)

Material	Manufacturer or Source	Test No.	Sample Preparation	Remarks	Thickness (inch)	No. Reactions/No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
P-615 (25-40-1) W/W Diamorphie Tracer-Tech Penetrant	Shannon Luminous Materials Company	5275	0.50 cc volume vacuum dried			2/20	10	-	U
PGP + STS Penetrant	Space Information and Development Division of North American Aviation Co.	4903	0.50 cc volume in test cup			0/20	10	-	BT
PGP + STS Penetrant	Space Information and Development Division of North American Aviation Co.	4960	0.50 cc volume oven dried at 100°C for 2 hours			0/20	10	-	BT
PGP + STS Penetrant	Space Information and Development Division of North American Aviation Co.	4961	0.50 cc volume vacuum dried for 1 hour, 30 minutes			0/20	10	-	BT
PGP + STS Penetrant	Space Information and Development Division of North American Aviation Co.	4901	Novabestos 751 IT soaked in penetrant for 1 hour, drained for 30 minutes, oven dried at 60°C for 1 hour			0/20	10	-	BT
PGP-10-T Penetrant	Space Information and Development Division of North American Aviation Co.	4904	0.50 cc volume in test cup			0/20	10	-	BT
PGP-10-T Penetrant	Space Information and Development Division of North American Aviation Co.	4958	0.50 cc volume oven dried at 100°C for 2 hours			0/20	10	-	BT
PGP-10-T Penetrant	Space Information and Development Division of North American Aviation Co.	4959	0.50 cc volume vacuum dried for 1 hour, 27 min.			0/20	10	-	BT
PGP-10-T Penetrant	Space Information and Development Division of North American Aviation Co.	4902	Novabestos 751 IT (0.020) soaked in penetrant for 1 hour, dried at 60°C for 1 hour			0/20	10	-	BT
PGP-26 AF Penetrant	Space Information and Development Division of North American Aviation Co.	4954	5 drops oven dried at 100°C for 1 hour, 45 minutes			0/20	10	-	BT

TABLE VIII. PENETRANTS AND PENETRANT COMPONENTS (Continued)

Material	Manufacturer or Source	Test No.	Sample Preparation	Remarks	Thickness (inch)	No. Reactions/No. Tests	Energy Level Kg/in	Batch or Jar Rating	Material Rating
PGP-26 BF Penetrant	Space Information and Development Division of North American Aviation Co.	4953	5 drops oven dried at 100°C for 1 hour, 36 minutes			0/20	10	-	BT
PGP-26-BF Penetrant	Space Information and Development Division of North American Aviation Co.	4949	Novabestos 7511T soaked in penetrant for 30 minutes, oven dried at 60°C for 1 hour			0/20	10	-	BT
PGP-30-T80	Space Information and Development Division of North American Aviation Co.	4951	Novabestos 7511T soaked in penetrant for 30 minutes, oven dried at 60°C for 1 hour			0/20	10	-	BT
PGP-26 BF-6	Space Information and Development Division of North American Aviation Co.	10332	On anodized discs			1/280	10	-	BT
SKL-4 Penetrant	Magnaflux Corporation	4936	0.50 cc volume in test cup	Concentrate		0/20	10	-	BT
SKL-4 Penetrant	Magnaflux Corporation	4934	0.25 cc volume in test cup	Concentrate		2/20	10	-	BT
SKL-4 Penetrant	Magnaflux Corporation	4731	0.125 cc volume in test cup	Concentrate		0/20	10	-	BT
SKL-4 Penetrant	Magnaflux Corporation	4935	0.50 cc volume oven dried at 100°C for 4 hours	Concentrate		6/20	10	-	BT
SKL-4 Penetrant	Magnaflux Corporation	4745	0.50 cc volume oven dried at 100°C for 2 hours	Concentrate		0/20	10	-	BT
SKL-4 Penetrant	Magnaflux Corporation	4716	0.50 cc volume oven dried just to dryness	Concentrate		0/20	10	-	BT
SKL-4 Penetrant	Magnaflux Corporation	4715	1.00 cc volume oven dried just to dryness	Concentrate		3/20	10	-	BT

TABLE VIII. PENETRANTS AND PENETRANT COMPONENTS (Continued)

Material	Manufacturer or Source	Test No.	Sample Preparation	Remarks	Thickness (inch)	No. Reactions/ No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
SKL-4 Penetrant	Magnaflux Corporation	4933	0.50 cc volume vacuum dried	Concentrate		1/40	10	-	BT
SKL-4 Penetrant	Magnaflux Corporation	4732	2 cc volume vacuum dried	Concentrate		0/20	10	-	BT
SKL-4 Penetrant	Magnaflux Corporation		0.50 cc volume in test cup	Diluted with 3 parts water to 1 part SKL-4					
SKL-4 Penetrant (3 to 1 Dilution)	Magnaflux Corporation	4599	0.125 cc volume in test cup	Diluted with 3 parts water to 1 part SKL-4		0/20	10	-	BT
SKL-4 Penetrant (3 to 1 Dilution)	Magnaflux Corporation	4915	Novabestos 7511T soaked in penetrant for 1 hour, drained for 3 hours, oven dried at 60°C overnight	Diluted with 3 parts water to 1 part SKL-4		0/20	10	-	BT
SKL-4 Penetrant	Magnaflux Corporation	4733	2.00 cc volume evaporated to dryness, 3 hours at 100°C	Concentrate		1/20	10	-	U
SKL-4 Penetrant	Magnaflux Corporation	4595	2.50 cc volume evaporated at 100°C to 0.25 cc volume	Concentrate		3/16 2/17 2/15	10 5 3	-	U
SKL-4 Penetrant	Magnaflux Corporation	4905	Novabestos 7511T soaked in penetrant for 1 hour, drained for 1 hour, oven dried at 60°C for 1 hour	Concentrate		20/20	10	-	U
SKL-4 Penetrant	Magnaflux Corporation	4926	Novabestos 7511T soaked in penetrant for 1 hour, drained for 3 hours, oven dried at 60°C overnight	Concentrate		6/20	10	-	U
SKL-4 Penetrant (3 to 1 Dilution)	Magnaflux Corporation	4924	Novabestos 7511T soaked in penetrant for 1 hour, dried at 60°C for 30 minutes	Diluted with 3 parts water to 1 part SKL-4		0/20	10		BT
SKD-NF Spotcheck Developer	Magnaflux Corporation	4942	0.50 cc volume in test cup	Concentrate		0/20	10		BT

TABLE VIII. PENETRANTS AND PENETRANT COMPONENTS (Continued)

Material	Manufacturer or Source	Test No.	Sample Preparation	Remarks	Thickness (inch)	No. Reactions/No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
SKD-W Developer	Magnaflux Corporation	4930	0.50 cc volume in test cup	Concentrate		0/20	10	-	BT
SKD-W Developer	Magnaflux Corporation	4931	0.50 cc volume oven dried at 100°C	Concentrate		0/20	10	-	BT
SKD-W Developer	Magnaflux Corporation	4930	0.50 cc volume vacuum dried	Concentrate		0/20	10	-	BT
SPX-21 Spotcheck Developer	Magnaflux Corporation	4945	0.25 cc volume in test cup	Concentrate		0/20	10	-	BT
Turco Dy-Chek Remover 4441 Green Label	Turco Products, Inc.	5264	0.25 cc volume in test cup	Concentrate		0/20	10	-	BT
Turco Dy-Chek Remover 4441 Green Label	Turco Products, Inc.	5262	0.50 cc volume oven dried at 100°C	Concentrate		0/20	10	-	BT
Turco Dy-Chek Remover 4441 Green Label	Turco Products, Inc.	5263	0.50 cc volume vacuum dried	Concentrate		0/20	10	-	BT
Turco Dy-Chek Developer Green Label	Turco Products, Inc.	5261	0.50 cc volume in test cup	Concentrate		2/20	10	-	BT
Turco Dy-Chek Developer Green Label	Turco Products, Inc.	5260	0.25 cc volume in test cup	Concentrate		2/40	10	-	BT
Turco Dy-Chek Developer Green Label	Turco Products, Inc.	5258	0.50 cc volume oven dried at 100°C	Concentrate		0/20	10	-	BT
Turco Dy-Chek Developer Green Label	Turco Products, Inc.	5259	0.50 cc volume vacuum dried	Concentrate		0/20	10	-	BT
Turco Dy-Chek Penetrant 4449 Green Label	Turco Products, Inc.	5265	0.50 cc volume in test cup	Concentrate		0/40	10	-	BT
Turco Dy-Chek Penetrant 4449 Green Label	Turco Products, Inc.	5269	0.25 cc volume in test cup	Concentrate		0/40	10	-	BT
Turco Dy-Chek Penetrant 4449 Green Label	Turco Products, Inc.	5269	0.25 cc volume in test cup	Concentrate		0/20	10	-	BT
Turco Dy-Chek Penetrant 4449 Green Label	Turco Products, Inc.	5266	0.50 cc volume oven dried at 100°C for 30 minutes	Concentrate		0/20	10	-	BT

TABLE VIII. PENETRANTS AND PENETRANT COMPONENTS (Continued)

Material	Manufacturer or Source	Test No.	Sample Preparation	Remarks	Thickness (inch)	No. Reactions/ No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
Turco Dy-Chek Penetrant 4449 Green Label	Turco Products, Inc.	5267	0.40 cc volume vacuum dried	Concentrate		0/20	10	-	BT
Turco Dy-Chek Penetrant 4449 Green Label	Turco Products, Inc.	5608	Novabestos 7511T soaked in penetrant for 1 hour, drained for 30 minutes, oven dried at 60°C for 30 minutes	Concentrate		0/80	10	-	BT
Turco Fluoro-Chek Penetrant	Turco Products, Inc.	4251	0.50 cc volume in test cup	Regular		2/6 2/3 0/20	10 5 3	-	U
Turco Fluoro-Chek Penetrant	Turco Products, Inc.	4252	0.50 cc volume in test cup	High Sensitivity		5/20 3/20 0/20	10 5 3	-	U
Turco Fluoro-Chek Emulsifier	Turco Products, Inc.	4295	0.50 cc volume in test cup	Extremely violent reactions		2/13	10	-	U
Turco Fluoro-Chek Penetrant (WW)	Turco Products, Inc.	4296	0.50 cc volume in test cup	Extremely violent reactions		2/4	10	-	U
Visi-Safe Penetrant	Turco Products, Inc.	9778	Non-aqueous	On anodized discs		0/20	10	-	BT
Visi-Safe Developer	Turco Products, Inc.	8603		On anodized discs		0/20	10	-	BT
Visi-Safe Developer	Turco Products, Inc.	8604	Dry			3/20	10	-	BT
Special Penetrant 137-115	Magnaflux Corporation	3804	0.50 cc volume in test cup			0/20	10	-	U
Special Penetrant 137-115	Magnaflux Corporation	3819	0.25 cc volume in test cup			2/10 12/15	10 3	-	U
Special Penetrant 137-115	Magnaflux Corporation	3910	Two drops 1½ solution evaporated to dryness			2/7 0/13	10 5	-	U
Special Penetrant 137-115	Magnaflux Corporation	3819 3383	Porous aluminum castings soaked in penetrant and dried			2/9 2/11	10 5	-	U

TABLE VIII. PENETRANTS AND PENETRANT COMPONENTS (Continued)

Material	Manufacturer or Source	Test No.	Sample Preparation	Remarks	Thickness (inch)	No. Reactions/ No. Tests	Energy Level kg/m	Batch or Jar Rating	Material Rating
Special Penetrant 137-115	Magnaflux Corporation	3822	Porous stainless steel inserts soaked in penetrant and dried			2/3 2/9 2/8	10 5 2	-	U
Special Penetrant 137-89	Magnaflux Corporation	3683	0.50 cc volume in test cup	Violent explosions		6/20	10	-	U
Special Emulsifier 137-90	Magnaflux Corporation	3682	0.50 cc volume in test cup			0/20	10	-	U
Special Emulsifier 137-95	Magnaflux Corporation	3821	0.50 cc volume in test cup			0/20	10	-	U
Special Emulsifier 137-95	Magnaflux Corporation	3922	One drop on 2014-T6 aluminum alloy			3/20	10	-	U
ZE-43 Emulsifier	Magnaflux Corporation	4766	0.50 cc volume in test cup	For use with ZL-42 Penetrant		0/40	10	-	U
ZE-43 Emulsifier	Magnaflux Corporation	4724	0.25 cc volume in test cup	For use with ZL-42 Penetrant		3/20	10	-	U
ZE-43 Emulsifier	Magnaflux Corporation	4938	0.50 cc volume oven dried at 100°C for 3 hours	For use with ZL-42 Penetrant		6/20	10	-	U
ZE-43 Emulsifier	Magnaflux Corporation	4730	0.50 cc volume vacuum dried for 1 hour, 30 minutes	For use with ZL-42 Penetrant		2/20	10	-	U
ZE-43 Emulsifier	Magnaflux Corporation	4922	Novabestos 7511T soaked 1 hour in emulsifier, dried 3 hours in air	For use with ZL-42 Penetrant		3/20	10	-	U
ZE-43 Emulsifier	Magnaflux Corporation	4912	Novabestos 7511T soaked in emulsifier for 1 hour, oven dried at 60°C for 30 minutes	For use with ZL-42 Penetrant		20/20	10	-	U
ZE-43 Emulsifier	Magnaflux Corporation	4765	0.50 cc volume concentrated to 0.25 cc	For use with ZL-42 Penetrant		2/13 2/7	10 5	-	U



TABLE VIII. PENETRANTS AND PENETRANT COMPONENTS (Continued)

Material	Manufacturer or Source	Test No.	Sample Preparation	Remarks	Thickness (inch)	No. Reactions/ No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
ZL-42 Penetrant	Magnaflux Corporation	4768 4728	0.50 cc in test cup			0/20 0/20	10 10	- -	BT BT
ZL-42 Penetrant	Magnaflux Corporation	4760	0.25 cc volume in test cup			0/100	10	-	BT
ZL-42 Penetrant	Magnaflux Corporation	4739 4722	0.50 cc volume oven dried for 11 hours at 100°C			0/20 0/20	10 10	- -	BT BT
ZL-42 Penetrant	Magnaflux Corporation	4764	2.50 cc evaporated to 1.5 cc			0/20	10	-	BT
ZL-44 Penetrant (10 to 1 Dilution)	Magnaflux Corporation	5289	0.50 cc volume in test cup	Diluted 10 parts water to 1 part ZL-44		0/20	10	-	BT
ZL-44 Penetrant (10 to 1 Dilution)	Magnaflux Corporation	5287	0.25 cc volume in test cup			0/20	10	-	BT
ZL-44 Penetrant (10 to 1 Dilution)	Magnaflux Corporation	5288	0.50 cc volume oven at 100°C			0/20	10	-	BT
ZL-44 Penetrant (10 to 1 Dilution)	Magnaflux Corporation	5282	0.50 cc volume vacuum dried	Diluted 10 parts water to 1 part ZL-44		0/40	10	-	BT
ZL-44 Penetrant	Magnaflux Corporation	4746	0.50 cc volume in test cup	Concentrate		0/20	10	-	U
ZL-44 Penetrant	Magnaflux Corporation	4725	0.25 cc volume in test cup	Concentrate		0/20	10	-	U
ZL-44 Penetrant	Magnaflux Corporation	4740	0.50 cc volume oven dried at 100°C for 11 hours	Concentrate		2/20	10	-	U
ZL-44 Penetrant	Magnaflux Corporation	4738	0.50 cc volume dried for 1 hour, 30 minutes	Concentrate		3/20	10	-	U
ZL-44 Penetrant	Magnaflux Corporation	4929	Novabestos 7511T soaked in penetrant 1 hour, drained for 3 hours	Concentrate		20/20	10	-	U

TABLE VIII. PENETRANTS AND PENETRANT COMPONENTS (Continued)

Material	Manufacturer or Source	Test No.	Sample Preparation	Remarks	Thickness (inch)	No. Reactions/ No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
ZL-44 Penetrant	Magnaflux Corporation	4906	Novabestos 7511T soaked in penetrant for 1 hour, oven dried at 60° C for 30 minutes	Concentrate		20/20	10	-	U
ZL-44B	Magnaflux Corporation	4758	0.50 cc volume in test cup			0/40	10	-	U
ZL-44B	Magnaflux Corporation	4755	0.25 cc volume in test cup			0/40	10	-	U
ZL-44B	Magnaflux Corporation	4726	0.25 cc volume in test cup			0/20	10	-	U
ZL-44B	Magnaflux Corporation	4721	0.50 cc volume evaporated in oven at 100° C for 7 hours			0/40	10	-	U
ZL-44B	Magnaflux Corporation	4744	0.50 cc volume vacuum dried			5/20	10	-	U
ZL-44B	Magnaflux Corporation	4925	Novabestos 7511T soaked in penetrant for 1 hour, oven dried at 60° C for 30 minutes			31/40	10	-	U
ZL-44B	Magnaflux Corporation	4928	Novabestos 7511T soaked in penetrant for 1 hour, dried for 3 hours			0/20	10	-	U
ZL-44B, Batch IW9	Magnaflux Corporation	7935		Diluted 1 to 1 with water		0/20	10	-	BT
ZL-44B, Batch IW10	Magnaflux Corporation	7936		Diluted 1 to 1 with water		2/20	10	-	BT
ZL-44B	Magnaflux Corporation	4754	Five drops in test cup			0/20	10	-	U
ZL-44B	Magnaflux Corporation	5393	0.25 volume concentrate			3/20	10	-	U
ZL-44B (1 to 1 Dilution)	Magnaflux Corporation	6015	Novabestos 7511T soaked in penetrant for 1 hour, drained for 30 minutes, dried at 60° C for 30 minutes	Diluted 1 part ZL-44B to 1 part water		0/20	10	-	BT

TABLE VIII. PENETRANTS AND PENETRANT COMPONENTS (Continued)

Material	Manufacturer or Source	Test No.	Sample Preparation	Remarks	Thickness (inch)	No. Reactions/ No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
Zygo ZL-2 Penetrant	Magnaflux Corporation	4022	0.50 cc volume in test cup	Violent reactions		2/6 1/6 1/9 0/20	10 5 3 1	-	U
Zygo ZL-2 Penetrant	Magnaflux Corporation	4024	0.25 cc volume in test cup	Violent reactions		1/5 1/13 2/6 1/9 0/20	10 5 3 1 5	-	U
Zygo ZL-22 Penetrant	Magnaflux Corporation	4020	0.50 cc volume in test cup	Violent reactions		2/3 3/13 2/3 1/5	10 5 3 2	-	U
Zygo ZL-22 Penetrant	Magnaflux Corporation	4016	0.25 cc volume in test cup	Violent reactions		2/4 2/18	10 5	-	U
Zygo ZL-22 Penetrant	Magnaflux Corporation	4018	One drop of 1% solution, 99% trichloroethylene in test cup	Violent reactions		2/4 2/7 0/12	10 5 3	-	U
Zygo ZL-22 Penetrant	Magnaflux Corporation	4019	One spray coat on aluminum inserts	Violent reactions		4/4 1/6 1/10	10 5 3	-	U
Zygo ZL-4A Penetrant	Magnaflux Corporation	2059	0.50 cc volume evaporated to dryness			2/6 0/14	10 5	-	U
Zygo ZL-1A Penetrant	Magnaflux Corporation	4021	One drop in test cup			2/3 3/5 1/12	10 3 3	-	U
Zygo ZL-4B Penetrant	Magnaflux Corporation		On anodized discs	Diluted 9:1 with water		0/20	10	-	BT
Zygo ZL-4B Penetrant	Magnaflux Corporation	4737	0.50 cc volume in test cup			0/20	10	-	BT
Zygo ZL-4B Penetrant	Magnaflux Corporation	4723	0.25 cc volume in test cup			0/20	10	-	U

TABLE VIII. PENETRANTS AND PENETRANT COMPONENTS (Continued)

Material	Manufacturer or Source	Test No.	Sample Preparation	Remarks	Thickness (inch)	No. Reactions/No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
Zygo ZL-4B Penetrant	Magnaflux Corporation	4736	0.50 cc volume vacuum dried			3/20	10	-	U
Zygo ZL-4B Penetrant	Magnaflux Corporation	4743	0.50 cc volume evaporated to dryness at 100°C			2/20	10	-	U
Zygo ZL-4B Penetrant	Magnaflux Corporation	4920	Novabestos 7511T soaked in penetrant for 1 hour, oven dried for 30 minutes at 60°C			14/20	10	-	U
Zygo ZP-4 Developer	Magnaflux Corporation	5474	0.50 cc dispersion, oven dried			0/20	10	-	BT
Zygo ZP-4A Developer	Magnaflux Corporation	5475	0.50 cc dispersion, oven dried			0/20	10	-	BT
Zygo ZP-45 Developer	Magnaflux Corporation	4719	0.50 cc volume in test cup	1 ounce to pint of water		0/20	10	-	BT
Zygo ZP-45 Developer	Magnaflux Corporation	4720	0.50 cc volume oven dried at 100°C	28.4 gms in 473.2 cc of water		0/20	10	-	BT
Zygo ZP-45 Developer	Magnaflux Corporation	4718	0.50 cc volume vacuum dried	28.4 gms in 473.2 cc of water		0/20	10	-	BT
Zygo ZP-45 Developer	Magnaflux Corporation	4747	Stainless steel inserts dipped in solution and dried	28.4 gms in 473.2 cc of water		0/20	10	-	BT
Zygo ZP-5 Penetrex Developer	Magnaflux Corporation	3826	Residue of approximately 0.030 in test cup			0/40	10	-	BT
Zygo / LX 38 Penetrant	Magnaflux Corporation	5913	Novabestos 7511T soaked in solution for 1 hour, drained for 30 minutes, and dried at 60°C for 30 minutes			0/20	10	-	BT
Zygo / PX 404 Developer	Magnaflux Corporation	5912	Novabestos 7511T soaked in solution for 1 hour, drained for 30 minutes, and dried at 60°C for 30 minutes			0/20	10	-	BT

TABLE VIII. PENETRANTS AND PENETRANT COMPONENTS (Continued)

Material	Manufacturer or Source	Test No.	Sample Preparation	Remarks	Thickness (inch)	No. Reactions/ No. Tests	Energy Level kg/m	Batch or Jar Rating	Material Rating
Zygo KXS Cleaner	Magnaflux Corporation	5911	Novabestos 7511T soaked in solution for 1 hour, drained for 30 minutes, and dried at 60°C for 30 minutes			0/20	10	-	BT
Zygo ZL-10 Colorless Dye	Magnaflux Corporation	510	0.50 cc volume in test cup	Full strength		2/11 2/11 1/13	10 7 5	-	U
Zygo ZL-10 Colorless Dye	Magnaflux Corporation	537	2.5 ml of 5% water solution evaporated to dryness			1/17 1/13	6 4	-	U
Oil Red "O" Dye	Magnaflux Corporation	3757	Paste made of trichloroethylene and Oil Red "O" 0.050 inch in test cup, dried 48 hours	Violent reactions		3/9 1/2 1/9	10 3 2	-	U
Oil Red "O" Dye	Magnaflux Corporation	3759	Residue from 2.5 saturated solution of Oil Red "O" and methyl isobutyl ketone	Violent reactions		5/12 2/7	10 5	-	U
137-115 Special Penetrant	Magnaflux Corporation	3923	2219-T87 aluminum (dipped in Special Penetrant 137-115 emulsified with 137-95, rinsed, and dried			5/20 0/20 2/20	10 10 10	-	U
137-115 Special Penetrant	Magnaflux Corporation	3900	Aluminum cups scratched with emery wheel, soaked in Special Penetrant 137-115, emulsified with 137-95, rinsed with trichloroethylene, water, and dried			3/20	10	-	U
137-115 Special Penetrant	Magnaflux Corporation	3916	2014-T6 aluminum discs scratched with emery wheel, soaked in Special Penetrant 137-115 for 40 minutes, and emulsified with 137-95 for 5 minutes, rinsed in water, placed in developer for 10 minutes, rinsed with water, and dried			0/20	10	-	U

TABLE VIII. PENETRANTS AND PENETRANT COMPONENTS (Continued)

Material	Manufacturer or Source	Test No.	Sample Preparation	Remarks	Thickness (inch)	No. Reactions No. Tests	Energy Level Kg/in	Batch or Jar Rating	Material Rating
137-115 Special Penetrant	Magnaflux Corporation	3898	Aluminum cups scratched with X-acto No. 24 knife, soaked in Special Penetrant 137-115 for 30 minutes, emulsified with 137-95 for 10 minutes, rinsed with water, and dried			2/2 2/2 2/10	10 5 2	-	U
137-115 Special Penetrant	Magnaflux Corporation	3899	Aluminum cups 0.032 inch thick scratched with X-acto No. 24 knife, soaked in Special Penetrant 137-115 for 1 hour, emulsified for 10 minutes, rinsed with water, and dried at 100°C			2/3 3/4 2/3 0/10	10 5 2 1	-	U
137-115 Special Penetrant	Magnaflux Corporation	3919	Aluminum discs (cracked) soaked in Special Penetrant 137-115 for 30 minutes, soaked in emulsifier for 2 minutes, rinsed, dipped in developer, rinsed with water, and dried			0/20	10	-	U
137-115 Special Penetrant	Magnaflux Corporation	3904	2014-T6 aluminum 0.063-inch thick, scratched with emery wheel, soaked 30 minutes in Special Penetrant 137-115, emulsified with 137-95 for 10 minutes, rinsed with water, and dried			2/6 2/14	10 5	-	U
137-115 Special Penetrant	Magnaflux Corporation	3908	1 cc of 1% solution of Penetrant trichloroethylene evaporated to dryness			0/20	10	-	U
137-115 Special Penetrant	Magnaflux Corporation	3902	Aluminum casting 0.250-inch thick, soaked in Zyglo 137-115, washed in Emulsifier 137-95, rinsed with water, and dried			0/20	10	-	U

TABLE VIII. PENETRANTS AND PENETRANT COMPONENTS (Continued)

Material	Manufacturer or Source	Test No.	Sample Preparation	Remarks	Thickness (inch)	No. Reactions/No. Tests	Energy Level Kg/m	Batch or Jar Rating	Material Rating
137-115 Special Penetrant	Magnaflux Corporation	3912	1 cc of 1% penetrant in trichloroethylene in scratched aluminum cups, evaporated to dryness			2/20	10		U
137-115 Special Penetrant	Magnaflux Corporation	3918	Special Penetrant 137-115 placed in 0.032-inch hole, emulsified with 137-95, rinsed with water, placed in developer, rinsed with water, and dried			1/20	10	-	U
137-115 Special Penetrant	Magnaflux Corporation	3917	2014-T6 aluminum discs scratched with emery wheel, soaked in Special Penetrant 137-115 overnight, soaked in emulsifier 137-95 for 10 minutes, rinsed with water, placed in developer, rinsed with water, and dried			0/20	10	-	U
137-115 Special Penetrant	Magnaflux Corporation	3928	2014-T6 aluminum (cracked) soaked in Special Penetrant 137-115, emulsified with 137-95, rinsed, and dried			0/40	10	-	U
137-115 Special Penetrant	Magnaflux Corporation	3920	2014-T6 aluminum discs (cracked) soaked in Special Penetrant 137-15 for 24 hours, emulsified with 137-95 for 10 minutes, rinsed with water, dipped in developer, rinsed with water, and dried			1/40	10	-	U
137-115 Special Penetrant	Magnaflux Corporation	3926	356 aluminum soaked in Special Penetrant 137-115, emulsified with 137-95, rinsed, dipped in developer, rinsed, and dried			2/40	10		U

TABLE VIII. PENETRANTS AND PENETRANT COMPONENTS (Continued)

Material	Manufacturer or Source	Test No.	Sample Preparation	Remarks	Thickness (inch)	No. Reactions/No. Tests	Energy Level Kg/m	Batch or Lot Rating	Material Rating
137-115 Special Penetrant	Magnaflux Corporation	3905	2014-T6 aluminum 0.063-inch thick, scratched with emery wheel, emulsified with 137-95 for 30 minutes, washed, soaked in trichloroethylene for 1 hour, washed with 137-95, rinsed, dried, washed with trichloroethylene, and dried at 150°C			0/20	10	--	U
137-115 Special Penetrant	Magnaflux Corporation	3903	Aluminum casting 0.1063-inch thick, soaked in Emulsifier for 10 minutes, and dried at 200°F for 10 minutes			2/2 1/2 2/3	10 5 2	-	U



TABLE VIII. PENETRANTS AND PENETRANT COMPONENTS (Continued)

Material	Other Comments	Manufacturer	Results				Component Rating	System Rating
			No. Reactions/No. Tests at 10 kg-m			Nov. asbestos		
			Anodized Aluminum Disc		Drained at 45°C			
			Drained at 90°C					
Dye Penetrants								
P-133		Shannon Luminous Materials Company			20/20		U	U
P-505 (27-7-5)	Fraudstfer E-159, Developers D-492, 498	Shannon Luminous Materials Company	0/20	0/20	0/20		BT	U
P-545 (30-7-2)	Cleaner K-4-10 A	Shannon Luminous Materials Company			0/20		BT	BT
P-600 (25-40-5) W/W Diamorphic (9:1 dilution)	Water Washable, Developers D-492, 498	Shannon Luminous Materials Company	0/20	4/20, 4/20	0/20, 1/20		BT	BT
P-605 (25-40-4) Concentrate	Water Washable, Developers D-492, 498	Shannon Luminous Materials Company	20/20	20/20	20/20		U	U
P-605 (25-40-4) (10:1 dilution)	Water Washable, Developers D-492, 498	Shannon Luminous Materials Company	0/20, 0/20	7/20, 6/20, 5/20	2/20		BT	BT
P-610W (25-40-3) Concentrate	Water Washable, Developers D-492, 498	Shannon Luminous Materials Company	20/20	13/20	11/20		U	U
P-610W (24-40-3) (9:1 dilution)	Water Washable, Developers D-492, 498	Shannon Luminous Materials Company	2/20	6/20	6/20		U	U
P-615W (25-40-1)	Water Washable, Developers D-492, 498	Shannon Luminous Materials Company	20/20, 20/20	20/20, 20/20	20/20, 19/20		U	U
P-615W (25-40-1) (9:1 dilution)	Water Washable, Developers D-492, 498	Shannon Luminous Materials Company	0/20, 0/20	6/20, 3/20, 4/20, 5/20	7/20, 4/20, 4/20, 3/20		U	U
PDP 26-BF-3	-	Space Information Division, NAA			0-11/20		BT	BT

TABLE VIII. PENETRANTS AND PENETRANT COMPONENTS (Continued)

Material	Other Comments	Manufacturer	Results				Component Rating	System Rating
			No. Reactions/No. Tests at 10 kg-m			Novabestos		
			Anodized Aluminum Disc					
			Drained at 45°C	Drained at 90°C				
SKID Penetrant NAA-M-103-565H	Emulsifier 563-C	Space Information Division, NAA	0/20	0/20	5/20	U	BT	
PCT-26BF-6		Space Information Division, NAA			1/280	BT	BT	
Spot Check SKL-4 Concentrate	Water Washable Developers Recommended by Manufacturer	Magnaflux Corporation	20/20, 20/20	14/20	10/20, 13/20	U	U	
Spot Check SKL-4 (3:1 dilution)	Water Washable Developers Recommended by Manufacturer	Magnaflux Corporation	0/20, 0/20	0/20, 0/20	0/20, 0/20	BT	BT	
Turco 4499 Green Label	Turco Dy-Check Remover 4441 and Dy-Check Developer	Turco Products, Incorporated	0/20	0/20	0/20	BT	BT	
Visi-Safe	Visi-Safe Developer	Turco Products, Incorporated			0/20	BT	BT	
Zygo ZL-44B	Water Washable Developers Recommended by Manufacturer	Magnaflux Corporation	18/20, 13/20	4/20	7/20	U	U	
Zygo ZL-44B (1:1 dilution)	Water Washable Developers Recommended by Manufacturer	Magnaflux Corporation	0/20	0/20, 1/20	3/20, 1/20, 0/20	BT	BT	
Zygo ZL-4BL (9:1 dilution)	Water Washable Developers Recommended by Manufacturer	Magnaflux Corporation			0/20	BT	BT	
Zygo ZL-46	Cleaner ZC-46 and Developer ZD-46	Magnaflux Corporation	0/20, 0/20, 0/20	0/20	0/20	BT	BT	
Zygo ZL-42*	Emulsifier ZL-43, Developer Recommended by Manufacturer	Magnaflux Corporation	2/20, 0/20	3/20, 0/20	4/20, 7/20	U	U	

\*This material may have been contaminated with ZL-43

TABLE VIII. PENETRANTS AND PENETRANT COMPONENTS (Continued)

Material	Other Comments	Manufacturer	Results				Component Rating	System Rating
			Novabestos	No. Reactions/No. Tests at 10 kg-m				
				Anodized Aluminum Disc				
				Drained at 45°C	Drained at 90°C			
Fluoro-Finder FL-50 <u>Emulsifiers or Cleaners</u> Emulsifier 563 C	Penetrant NAA-M-103-565H	Testing Systems, Inc.	0/20	3/20	20/20	20/20	U	U
Emulsifier E-159 (25-7-3)	Penetrant P-505	Space Information Division NAA	20/20	19/20	20/20	2/20	BT	BT
Zygo Cleaner ZC-46	Penetrant ZL-46	Shannon Luminous Materials Company	0/20	0/20	0/20	0/20	U	U
Zygo Emulsifier ZE-43	Penetrant ZL-42	Magnaflux Corporation	20/20	10/20	15/20	15/20	BT	BT
Cleaner K-4-10A	Penetrant P545	Magnaflux Corporation			0/20	0/20	BT	BT
<u>Developers</u> D-492 (24-44-4)		Shannon Luminous Materials Company	0/20				BT	BT
D-498		Shannon Luminous Materials Company	0/20				BT	BT
SKDW		Magnaflux Corporation	0/20				BT	BT
SKDNF		Magnaflux Corporation	0/20				BT	BT
SPX-21		Magnaflux Corporation	0/20				BT	BT
Zygo ZP-4		Magnaflux Corporation	0/20				BT	BT

TABLE VIII. PEUTERANES AND PENTETAN COMPONENTS (Concluded)

Material	Other Comments	Manufacturer	Results			Component Rating	System Rating
			Novabestos	No. Reactions/No. Tests at 10 kg-m			
				Anodized Aluminum Disc			
				Drained at 45°C	Drained at 90°C		
Zygo ZP-4A		Magnaflux Corporation	0/20			BT	
Zygo ZP-5		Magnaflux Corporation	0/20			BT	
Zygo ZP-46		Magnaflux Corporation	0/20			BT	
Zygo ZP-45		Magnaflux Corporation	0/20			BT	
Zygo ZPX-404		Magnaflux Corporation	0/20			BT	
Visi-Safe Developer		Turco Products, Inc.			0/20	BT	
Dyes							
Fluorescing Agent GPC	1 cc saturated solution evaporated to dryness	G. W. Gates Company	4/20	10			
Oil Red "O" Dye	Residue from 0.5 cc of saturated solution in methyl isobutyl ketone		5/12	10			
Oil Red "O" Dye	Residue from 0.5 cc dissolved in trichloroethylene. Dried 48 hours		2/9	10			
ZL-10 Colorless Dye	Full strength	Magnaflux Corporation	2/11	10			
ZL-10 Colorless Dye	2-1/2 cc of 5% water solution evaporated to dryness	Magnaflux Corporation	1/7	10			

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APPROVAL

COMPATIBILITY OF MATERIALS WITH LIQUID  
OXYGEN - VOLUME I

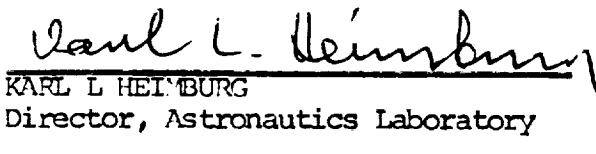
By C. F. Key

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This document has also been reviewed and approved for technical accuracy.



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